Virginia Wildlife

OCTOBER 1963

VOLUME XXIV / NUMBER 10

20 CENTS

Virginia Wildlife

Dedicated to the Conservation of Virginia's Wildlife and Related Natural Resources and to the Betterment of Outdoor Recreation in Virginia

Published by VIRGINIA COMMISSION OF GAME AND INLAND FISHERIES, *Richmond 13, Virginia*

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COVER: This aerobat of the treetops needs no introduction. The gray squirrel, by far the most abundant forest game species in Virginia, thrives from city park to mountain wilderness, wherever large trees, nuts and acorns abound. Our photographer: Karl Masłowski.

SUBSCRIPTIONS: One year, $1.50; three years, $3.50. Give check or money order, made payable to the Treasurer of Virginia, to local game commission employee or send to Commission of Game and Inland Fisheries, P. O. Box 1642, Richmond 13, Virginia.

VIRGINIA WILDLIFE is published monthly at Richmond 13, Virginia, by the Commission of Game and Inland Fisheries, 7 North Second Street. All magazine subscriptions, change of address notices, and inquiries should be sent to Box 1642, Richmond. The editorial office gratefully receives for publication news items, articles, photographs, and sketches of good quality which deal with Virginia's soils, water, forests, and wildlife. The Commission assumes no responsibility for unsolicited manuscripts and illustrative material. Credit is given on material published. Permission to reprint text material is granted provided credit is given the Virginia Commission of Game and Inland Fisheries and VIRGINIA WILDLIFE. Clearances must be made with photographers or artists to reproduce illustrations.

Second-class postage paid at Richmond, Va.

EDITORIAL

Time For Decision

TROUT fishing in Virginia is attracting more and more anglers as the human population of the state grows and as outdoor recreational needs increase. Whether we are going to have more frustrated trout fishermen on our hands, or more happy ones, depends upon some basic decisions that have to be made with respect to management of our trout fishery.

The key to more and better trout fishing, and to angler satisfaction, lies in the fact that the growing demand is for more *recreation* —for more sport—rather than for more fish as an item of diet. If this were not so, any hope of ever keeping up with the demand would have no basis in reality.

Virginia lies near the border of the natural trout range. Under primeval conditions, such as have not been seen in this century, some Virginia streams once carried water of quality and quantity in which trout could live and reproduce. But under the best of conditions Virginia's trout streams have always been limited in their productivity. Today even our better trout waters are barely marginal with respect to temperature and volume during the late summer months. Natural reproduction never has and never will produce a bountiful trout surplus for harvest in Virginia.

One solution to this supply and demand dilemma is to augment natural production with a vast hatchery and restocking program. This is where most of the emphasis lies in our present trout "management" efforts. This emphasis on hatchery operations and restocking provides a lot more fish to be caught and killed each year than the streams could ever produce. The quality of the sport it provides is something else again.

Hatchery reared trout are expensive. Little eight or ten inchers cost about 30 cents apiece. The angler's trout license fee pays for about 7½ trout. The license holder who lands just that many yearling trout in a whole season is not likely to brag about the quality of the fishing he has enjoyed. If trout fishermen were willing to pay the whole cost of the hatchery program and be happy with the result, all might be well. They do not pay the whole bill, however, and their sport already is being subsidized to some extent by license money collected from warm water fishermen. A lot of trout fishermen think they still pay too much for the sport they get.

Other factors detract from the quality of put-and-take trout fishing. The angler seldom hooks a trophy fish. The fish are too easy to take, and fishing success on any stream virtually ends the first open week end after stocking. Fisherman success is on a first come-first served basis, and angling skill is not at a premium.

The rising demand for *better* trout fishing cannot be met merely by producing a greater quantity of fish that at best would provide only a little *more* fishing of the same substandard quality. Fortunately, there is an alternative solution to the problem. It consists of three distinct actions: expand the fish-for-fun concept, under which only artificial lures are used and all fish hooked are returned immediately to the water; introduce pay-as-you-go fishing, for those anglers who want to keep the fish they catch and are willing to pay the cost of raising them; and utilize funds thus saved for research and development work that can bring about permanent improvements in trout fishing.

The advantages of fish-for-fun fishing are not theory but proven fact. On streams where this concept is put into practice anglers have better success daily throughout the season, measured by the number of fish hooked per hour of effort, than they have even on opening day on put-and-take streams. Furthermore, some of the fish in the streams

(Continued on page 22)

LETTERS

Apology Due Professor Massey

I am peeved to see that you added to my "Red Maple" article (VIRGINIA WILDLIFE, September issue) without sending me a copy of the addition for my approval.

In the article "Autumn Pageant" [see page 8] and in other writings I have stated that it is not frost which brings out the autumn coloring in leaves, and that in fact frost is damaging to the development of the coloring. The fourth line of the "Red Maple" article, as published, says that it is frost which brings out the coloring. I am not responsible for that statement. It is you who have caused me to contradict myself.

A. B. Massey
Virginia Polytechnic Institute

Professor Massey is quite right. We did add to his "Red Maple" manuscript the statement that the trees "when touched by the first fall frost, provide a spectacular display of brilliant scarlet foliage." Any contradiction between this and the author's other writings, past, present, or future, is our fault and not his.—Ed.

Simplify Game Laws

IN the August issue of VIRGINIA WILDLIFE you were trying hard to convince readers that Virginia game laws were not so involved as has been said. Obviously other hunters have had the same thoughts as I have on the subject. I have hunted for 20 years and lived in eight states during that period of time. I have also hunted as a non-resident in several more. These states range from Arizona and Texas in the West, Florida in the South, Nebraska, Iowa, Minnesota in the Middlewest and several here in the East. I contend that a cursory examination of the laws of these states will illustrate that Virginia's are needlessly complicated. Not so much that they can't be mastered, of course, as you stated. However, with the irregular county lines and road courses in Virginia the problem is compounded by changing rules from county to county and local laws. For example: none of the above mentioned states have a snow law, none restrict Sunday hunting, none have ten separate squirrel seasons (this is especially absurd), none have such chaotic laws on hunting fox.

I have lived in Virginia four years and have come to love the state. I especially commend state authorities on the excellent public hunting grounds. However, I also contend that the hunting laws are needlessly complex. I think a survey of readers who commonly hunt throughout the state would reveal the same feeling.

Terry Miller
Alexandria, Virginia

If reader Miller does not believe that we agree with a lot of what he has to say he should dig out last May's issue of VIRGINIA WILDLIFE *and read that month's editorial again.—Ed.*

Likes Brown Trout

THE continuing excellence of your magazine amazes me. I know of only one place where brown trout are as beautiful as the one on your April cover—Quake Lake on the Madison River in Montana. I'm certain that trout anglers in Virginia will come to love them and cuss them during the coming years, and when you've acquired a stock of wary critters over 16" I'll spend a lot of my retirement time matching my skill with their caution.

Edgar S. Krug, M.D.
State College, Pennsylvania

CONSERVATION'S OUTMODED CONCEPTS

By HAROLD E. ALEXANDER
Arkansas Game and Fish Commission

CONSERVATION does not provide a suitable philosophy around which we can build social progress unless it encompasses a fundamental concern for the preservation of the whole environment of man, including not only his material needs, but the spiritual, emotional and esthetic values which give meaning and purpose to human life.

When we consider resource uses, we are dealing with the concept which we call "conservation." The definitions and interpretations of the term "conservation" have set the course along which we have ventured to apply the concept. But one of our greatest difficulties in determining the relative significance of resource uses lies in the fact that *we have no clear-cut understanding of just what conservation means to us or to our society as a whole.* The very looseness of the term and its use to justify and define all manner and kinds of ideas and actions affecting resources is one of the principal problems we face.

> *"Conservation*
> *is thought and action directed by man*
> *to protect, maintain and fortify*
> *the environmental complex*
> *that supports and enriches life*
> *as it now exists on the planet earth."*
> —Arthur Carhart

It is notable that the conservation idea developed around the turn of the century when it became apparent that our material resources were disappearing faster than they could be replaced. Prior to that time the pattern was one of exploitation without consideration for the future. Concern with resource depletion was publicly demonstrated at the "Governors Conference" called by President Theodore Roosevelt in 1908. At this meeting the primary concern was with depletion of land and water resources essential to an affluent society. The agenda included discussions of soils, forests, sanitation, reclamation, grazing, and navigation. This meeting was the outgrowth of an immediate concern with river navigation problems; and it is notable that "wildlife" was not listed as a subject for discussion among the 11 topics presented. One participant, however, (Dr. George Kunz) expressed concern with the preservation of "scenic and historic" resources. Such an expression at this meeting was, however, unique, and was not in keeping with the major concern—the material wealth and economy of the nation.

In 1963, we have new problems not then anticipated. We are confronted with such problems as preservation of space, of vastly accelerated population growth, of great surplus of agricultural crops, of juvenile delinquency, the atom bomb, and the very survival of man under the conditions imposed by his technology. In short, we have a whole new manner of existence calling for the development of new patterns of thought and response to change.

I think it is self-evident that preconceived patterns of resource use and development are outmoded. Yet, through established patterns of use, traditional systems of economic enterprise, organizations with preconceived methods of resource development, and through the narrowly conceived objectives and authorizations defined by custom and carried out by vast and long established governmental agencies, we are, as one writer put it, "freezing resources into inflexible patterns of use." Today neither the philosophy or the systems we employ are adequate to meet the changing needs of our society, or to cope with the new problems created by technology.

While attempting to hang on to our old and outmoded systems and maintain the established order of responsibilities and authorities, we have, it seems, become aware that both our methods and organizations are inadequate to cope with the new problems confronting us. To compensate for such deficiencies, we have cloaked all resources with the "garb" called conservation. Every social group and agency has defined its purposes with the high-sounding connotations of the term, and many agencies, in order to fulfill their obligations to the concept, have organized their plans to conform to "multiple purpose" systems. All resource developments are, therefore, described as "conservation" no matter how or to what extent they may cancel out each other.

We have many examples of conflict in the application of so-called conservation principles. Such conflicts are particularly apparent in land and water developments. Conflicts in wetland drainage, which has eliminated a large percent of our waterfowl breeding grounds, and the avowed purposes of the program, i.e., to drain wetlands for agricultural use, are incongruous with increases in the vast agricultural surplus which we must store at public expense.

Pollution of water, based on established patterns of use, timber management with only immediate economic returns in view, and even the watershed program (generally accepted as a proper application of the conservation principle) all have ramifying effects without sufficient consideration for their total effects on other resources and on human environment.

The scope of developments and their ramifications extends from alterations in water flow patterns and the wide diversity of human needs to the burdens of taxation which bear down on the living and the yet unborn.

The problem of pesticides and their use is a critical one. The narrow and "single objective" approach with undetermined effects leaves us with immense areas of unfulfilled obligations, to other organisms, to a full consideration of the problems presented, and to future human generations. The fact that 6,000 commercial brands of pesticides are being sold leads to the assumption that monetary considerations supersede all others, even the health and welfare of the biotic community and of man.

Condensation and revision of an original paper being published in the *Transactions of the 28th North American Wildlife Conference.*

If we are to evaluate resources fully and their relation to human welfare, we need a better and more inclusive interpretation of what "conservation" means. An adequate conservation concept must encompass all human needs. Its application cannot be restricted to material needs. It must recognize and include all elements of our culture, and encompass emotional, esthetic and sentimental values which "give meaning to life."

A major problem in resource use evaluations is that we now have no standards for recognizing or placing values on qualities in our environment which are spiritual and esthetic, though "these values exist" and are essential to our culture and welfare. The "fiscal yardstick" is not enough to measure all our needs, but commonly applied standards for evaluation of the worth of our resources provide no other criteria for judgments essential to an adequate concept.

Until what we call conservation embraces a wider view, what we have to sell or promote is only a reapplication of a monetary principle, too narrow to satisfy the needs of society in the troubled days ahead. We need a revision of goals and purposes sufficient to recognize "the spiritual, emotional, and ethical needs of society." Without this, our efforts lead only to a cultural desert. A restatement of purposes is imperative. This is probably the most critical and most difficult of our tasks.

Beyond this, our efforts must be extended into the fields of education, politics and legislation. Without understanding on the part of the educator and educated, we cannot influence actions which determine the course of resource use.

It is my belief that our educational efforts have fallen short of what our goals should be. The educator has not recognized the scope of the problems presented. His efforts have been particularized and specialized. This is equally true of the resource scientist, who has often given his efforts "to objectives which have little immediate or even distant bearing on those critical problems which directly affect our survival and our manner of existence."

In a recent check of abstracting journals covering the conservation field, it was noted that there was vastly more concern with and effort given to particularized studies than with evaluation of purpose or concern with the problems which dominate the patterns of resource use. The papers covering the fundamental concepts of conservation were few and far between. Most papers abstracted were concerned with techniques, control, food habits of wildlife, life histories or disease.

It is apparent that we often give our time and efforts to objectives which might be deferred until we find solutions to the critical problems we face. We "fiddle while Rome burns," and our efforts have often been inconsequential and ineffective. Our main purpose should be to preserve a world "which we can belong to and expect to survive [in]."

As we have noted, initially, our first task lies in revising the concept of conservation to include many things beyond and in addition to material values. These include those intangibles that give "meaning to life." This necessitates revising standards, attitudes and practices in vogue. In this task the educator can lead the way, if he will, but he must first re-educate himself.

The media for educating are well known. They include the schools, the journals, publications, T.V., and even "lobbying" in the town square. We have, as yet, many unrealized opportunities in the fields of education. Even conservation textbooks are inadequate, are largely concerned with use of resources for profit, and are ineffectively used in the schools and colleges. But the schools, because their business is education, furnish one of the best opportunities to get conservation across to a large (and available) audience.

Our biggest problems today in resource conservation are created by established attitudes and systems which defy change, and by the impact of our technological capacities to change our environment. Governmental agencies, with limited purposes and high degrees of specialization and influence, present one of our major problems in changing the conservation viewpoint. Giving a wider perspective to conservation, as practiced by these agencies, is handicapped by their separateness, singleness of purpose, specialization, and political (meaning economic) strength.

The approach to alteration of these systems of political enterprise is most difficult. Further application of the "multiple use concept" is not the whole answer. But resource developments which alter environment, however they are accomplished, are everyone's concern in a democracy, and many of the changes being brought about in our environment are "terribly permanent."

Present systems of resource management are inadequate or have outlived their original intent and usefulness. They fail to include many important considerations. Changing these systems involves not only education in new ideas. The solution to these problems lies in education and in taking sides on issues involving the principles we support. As conservationists whose purpose is promoting a better way of life, we cannot avoid conflict, and we must not shrink from it.

John Dingle once commented that "conservationists . . . are sufficiently numerous to be an almost irresistible lobby if they are sufficiently organized." We are, to a large extent, ignoring this technique for promoting our ideas; but function as isolated groups, weak and relatively ineffective. There are some exceptions and shining examples which contradict this contention. Basically, however, our efforts *are* scattered, and often are limited to protecting remnants of such things as isolated bits of scenery, rare species, and occasional concern with principles. Unification of effort is essential, if we are to preserve opportunities for "diversity" in our environment, and education in the effectiveness of group action is needed.

"The worst feature of the past is our best hope for the future. What, then, is that feature? It is that your affairs go wrong because you neglect every duty, great or small. Since surely, if they were in this plight in spite of your doing all that was required, there should not be even a hope of improvement. But, in fact, it is your indifference and carelessness that Phillip has conquered; your city has not been conquered. Nor have you been defeated—no! you have not even made a move."*

The development of an adequate conservation concept, and constant efforts through education and persistent action are necessary if we are to achieve our aims—the preservation of an environment which will contain all the material, emotional, and spiritual needs of man.

*Telford Taylor in "The Ethics of Public Office," *Saturday Evening Post*, April 16, 1960, quoting Demosthenes' address to the Athenians.

TURKEY TRAPPER

By JACK V. GWYNN
Game Research Biologist

IT was October 23. For nearly five hours, since before daylight, Andy had been sitting in the blind at the Greavers Ridge trap site. Now with 11 wild turkeys before him in the clearing, Andy forgot about the rain, the cold, the short nights of sleep and the long days of work that had brought this flock to the trap site.

In spite of the excitement of the moment, turkey trapping procedures were becoming routine for Andy Huffman, Gathright Wildlife Management Area Supervisor. Through years of trial and error and frustration, wild turkey trapping know-how had been slowly accumulated by Game Commission Biologists Ned Thornton and Jim Engle, and Game Manager Don Fauber, trapping on U. S. Forest Service's Big Levels Refuge in Augusta County. Gradually the basic equipment had been improved and the "bugs" worked out of the procedures. The original electric detonating system was replaced with lighter weight and more flexible wiring. It was re-wired (in series) so that circuit breaks could be detected quickly by using a continuity tester. Where once each of the three projectiles had been attached to the net by a long steel cable, iron clamps and bolts, a steel ring and three long lengths of nylon rope, now there was only a single short loop of braided nylon line. Though these and other improvements have simplified the installation of the cannon-net trap since Jim Engle began trapping in 1955, wild turkey trapping will always be a job requiring long hours and an alert trapper in top physical condition to withstand the rugged pace required for success.

Last fall was Andy's fourth season as a turkey trapper. Prior to October 23, Andy had carefully prepared the Greavers Ridge and numerous other trapping sites. He had located the blinds in positions that would give him good visibility but also afford concealment from the baited area. He had cleared out the brush and debris that would have interfered with the throw and lie of the net as the projectiles, fired from their cannons, pulled the nylon mesh over the 30 by 60 foot catch area. He had pre-arranged camouflage materials for the net and cannons so that at the proper time the equipment could be slipped into place with little apparent change in the scenery.

Andy's baiting operations had been going on for several weeks and he had already trapped 32 birds. Baiting was performed with the care and precision that is developed with experience. Not too much bait, nor too little; placement not too close, nor too far, from where the net eventually would be set. After the trap was set, additional care would be taken to keep the feeding turkeys from in front of the cannons.

Turkey sign on the Greavers Ridge site for several days had given Andy sufficient evidence that a good flock was using the area. After the turkeys had gone to roost, Andy installed the trap. He dug the cannons in, unrolled the net and staked the trailing edge, placed the black powder loads and projectiles in the cannons, unrolled the electric wire from the cannons to the blind, and attached the electric squib which would ignite the black powder. Plastic bags were placed over the mouths of the cannons to keep out possible debris and rain. The trap was then camouflaged and the bait placed carefully for what Andy hoped would be the last time.

Threatening weather had caused him to prepare a heavier black powder charge for the cannons, in case the set got soaked. When the camouflage material becomes heavy with rain a heavier charge is necessary to lift and extend the net.

After supper Andy had measured out the black powder on his scale. He had placed the powder in small balloons and inserted the electric squib that would explode the powder when he closed the circuit with a switch near the battery. Then he had wound small rubber bands around the necks of the balloons and the six foot copper wires that extended from the charge.

Sitting quietly in a roofless blind on a cold morning requires warm clothing. Andy dressed accordingly. He ate breakfast and left in his four-wheel drive jeep. He drove on rugged trails for several miles, stopping to check and replenish the bait at two areas where turkeys were active. It was still dark as he parked the jeep some distance from the trap site. Walking to the blind Andy felt it begin to rain.

With the aid of his flashlight he placed the heavier black powder loads in each of the cannons, readjusting the camouflage when he had finished. He entered the blind and checked the wiring circuit. The bulb in the continuity tester glowed brightly, and Andy knew that the heavier loads he had just attached would not misfire. He hooked up the switch, connected the battery, and sat down to wait in the rain. It was

Commission Photo by Kesteloo

With the alert and cautious birds feeding in front of his blind the turkey trapper wonders if they can hear his heart beating.

not as easy as it sounds, to wait silently for turkeys that might not come.

Although Andy had caught 132 wild turkeys on Gathright since he began trapping in 1959, he had never become accustomed to the thrill of watching and catching the big wild birds.

Now the flock was feeding in front of the trap. He wondered if they could hear his heart beating. The flock, always alert and cautious, took more than 10 minutes to settle down in a position which would bring success to the day's efforts. In the past, Andy had let flocks pass on without throwing the net. It was better to try again the next day than to end up with a poor catch. This was a lesson that comes hard to most wild turkey trappers.

When all the turkeys were feeding, with heads lowered to the ground, Andy closed the switch. He heard the roar of the cannons and leaped from the blind in the same instant. As he ran to the net he could see all eleven turkeys jumping under the fully extended net. He watched them carefully as they became tangled in the webbing, to make sure that none escaped and that none became tangled enough to cut off its breathing.

Swiftly Andy removed the turkeys one at a time and placed them in eleven large bags. Inside these bags, securely fastened by draw strings, the turkeys had some freedom of movement but could not escape or injure themselves. The turkeys would not be kept in the bags for over eight hours since long periods of such confinement had been found to cause paralysis. If necessary, the turkeys could be transferred to special crates. Andy loaded bags and turkeys into his jeep and headed home.

It was 11:30 when Andy pulled up to his residence. His work for the day was not over, although he had been at it for eight hours. On the way to his house Andy noticed that the overcast was breaking up. He could save a lot of time if a plane could fly the turkeys to southwestern Virginia. Andy called the Covington airport.

The pilot who answered the call checked the weather, and reported that he could leave for Abingdon as soon as Andy could get the turkeys to the airport. Andy next called the Sheriff's office in Abingdon and asked if radio contact could be made with either Game Manager Ramon Sparks or Game Warden Ernest Yeatts. It could, and arrangements were made with Yeatts to meet the plane at the Abingdon airport at 2:30 p.m.

Several months before, Biologists Harold Trumbo and Charles Peery had drawn up the wild turkey release plans for Peery's district, after consulting with U. S. Forest Service personnel. They had agreed that at the completion of the stocking of the Walker Mountain area and the Kimberling area, Hidden Valley in Washington County and Maple Gap in Wise county would be the next release site areas.

On October 4 Peery had sent instructions concerning the details of the releases to all project personnel involved—game managers, game wardens, U. S. Forest Service personnel, biologists, and their supervisors. In accordance with these instructions, a release on the Hidden Valley Wildlife Management Area now was about to be completed.

Had the weather not cleared, Andy would have had to arrange a meeting with Warden Yeatts halfway between Gathright and the Hidden Valley area. When transporting turkeys by truck, Andy transfers the turkeys to specially constructed crates that have smooth interior walls and foam rubber cushioning lining the inside top of the crate. This lining reduces possible injury to high strung turkeys during relatively long transportation periods.

Commission photos by Kesteloo

Wild trapped turkeys are not sluggish when released, as were many of the game farm birds used in earlier restocking efforts.

Completing the phone calls, Andy riveted an aluminum leg band to each turkey and recorded the number with the sex and age of each bird. He had caught two adult females, five juvenile hens and four juvenile toms. Andy loaded his jeep with turkeys and headed for the airport, eating his lunch on the way.

Warden Yeatts was waiting when the plane landed at Abingdon at 2:35 p.m. He unloaded the turkeys from the plane and placed them in his vehicle. At 3:10 he untied the last bag and marveled as the adult hen flew from sight in the release area. He could not help but compare the behavior of these turkeys with the relatively sluggish action of the game farm turkeys he had released some years in the past.

Andy Huffman had watched the plane leave Covington, then driven back to the Greavers Ridge trap site. He cleaned the sticks and debris from the net, rolled it up and placed it in his jeep. Then he dismantled the trap equipment and loaded it into the vehicle. With a rake he retrieved most of the camouflage materials and replaced them in the position where the trap might be used again some day. He then drove to his workshop and hung up the nylon net to dry.

On his bait check rounds late that afternoon Andy took along his second cannon trap, in case the sign was as fresh at the Bolar Ridge trap site as he expected it to be. The hunting season would soon terminate the trapping, and Andy wanted to complete the Hidden Valley release quota of 20 turkeys, if possible. He had already caught 43 turkeys during the season, but completing the Hidden Valley quota would put that area one whole year ahead of schedule.

The Bolar Ridge site had been cleaned of its bait, and the droppings and scratchings indicated that a large flock of turkeys was using the clearing. Unloading the trapping equipment Andy installed the trap at the new site just at dusk. Again it was after dark when he returned home, and he had yet to make his additional charges for the cannons. It was still dark next morning when he dressed and ate breakfast, then left for the Bolar Ridge site to sit and wait for turkeys. Would he make another catch? He had been more often unsuccessful than successful, but again only time would tell.

For the wild turkey trapper the hours are long and the work is hard, but there will always exist for him the rewarding thrill of watching, outwitting and catching alive the largest and most magnificent of America's upland game birds.

AUTUMN PAGEANT

By A. B. MASSEY
Virginia Polytechnic Institute

INDIAN summer! Hunters and hikers alike feel the call of the wild, the urge to roam through fields and woods. Although one group is looking primarily for game, both enjoy nature's pageant.

Babcock (popular writer of the out-of-doors) writes, "My health is better in November." Well may it be, for the one who has taken full advantage through October of the invigorating autumn scene.

In some counties squirrel hunters wander through oak-hickory woods in the brisk, early October morning, stalking their game. The bird hunter, and his dog, practice in fields and fence rows. Each has felt the stimulation of it all. Well may it be that their health has improved by November.

Autumn coloring of leaves develops highly in our eastern states, especially through the Appalachian Mountains. In New England and southeastern Canada the varied yellow, red, and some green coloring in the maple leaves is especially spectacular. Southward the sumacs, hickories, black gums, tulip poplar, some species of oaks, along with an admixture of maples and others, develop magnificently colorful scenes. To enjoy the rich pageantry one should follow the Skyline Drive and Blue Ridge Parkway in early October, stopping at overlooks. The different kinds of trees, shrubs, and woody vines, varying in the shades of red, yellow, brown and near purple, display color patterns which are unequalled elsewhere in the world. Autumn coloration is so abundant in the eastern states that we do not realize that such coloration occurs in only a few favored places in the world. In our more western states the rich golden yellow of the cottonwoods, aspen, birches and a few maples, often intermixed with evergreen conifers, make a colorful but short display. In England, part of western Europe, an area in eastern China and part of Japan, autumn coloration develops, but the coloration in our eastern United States surpasses that in all other areas.

The richness and intensiveness of the autumn colors is influenced by weather conditions. It is not a matter of frost.

. . . the silence and mysterious beauty of autumn along woodland roads and trails . . .
Commission photo by Kesteloo

Commission photo by Kesteloo
Hunters and hikers alike feel the urge to roam through fields and woods and enjoy autumn's pageant.

In fact, early frost, by injuring the leaves, interferes with the full development of coloration. Sunny "Indian summer" days and chilly nights with temperatures in the 40's, but not frosty, bring out the most magnificent autumn pageant.[1]

During sunny days the green chlorophyll in the leaves plays its part in carbohydrate formation. During chilly nights conditions are not favorable for the movement of the sugars from the leaves. Biochemical action in the leaves results in the formation of various shades of red pigments known as anthocyanins. In leaves in autumn the variety of shades of red anthocyanins is conspicuous. Yellow colors are not due to anthocyanins formation, but to carotin and xanthophyll, associated with the green chlorophyll. When chlorophyll formation in leaves is checked, the yellow of the carotins and xanthophylls becomes conspicuous. This occurs in some of the variegated leaves, and in winter in the exposed leaves of the evergreen conifers. The brown color of the leaves of beech, and some of the oaks, is due to tannin in the leaves.

The hunters and hikers enjoy their vigorous outdoor sports for the physical exhilaration they feel as they put bodies through their paces in the bracing October air; but it is the inner man to which the silence and mysterious beauty of autumn along woodland roads and trails appeals.

[1]See Dr. Massey's letter on page 3.

Autumn colors in eastern United States surpass all others.
Commission photo by Kesteloo

Shenandoah Trails

By JOHN T. STARR

TO a good many people, the Skyline Drive and the Shenandoah National Park are the same thing. The Skyline Drive runs the whole length of the park, following the crest of the Blue Ridge for a distance of 105 miles. There is a large number of overlooks for leisurely enjoying the spectacular scenery—75 of them, in fact. It is no wonder that the drive is the favorite road of literally millions of Americans. For one thing, it is accessible. It is only hours from Washington, Baltimore, and Richmond. New York is no more than a day's drive away. It is beautifully engineered, with easy grades, and although there are many curves, none are dangerous. Together with the Blue Ridge Parkway, which is actually a prolongation of the Skyline Drive and will eventually connect the Shenandoah and Great Smoky Mountains National Parks with a continuous mountaintop road, it is the finest scenic road in the East and one of the finest in the country.

But to really see and enjoy the Blue Ridge country, you have to park your car and get out and walk. There are 203 miles of trails in the Shenandoah National Park, including a 94-mile piece of the famous Appalachian Trail that stretches from Maine to Georgia. The Appalachian Trail crosses the Skyline Drive at several points, and it is easy to pick it up at many of the overlooks, which are also convenient and safe places to leave your car. For the most part, the trail is fairly wide and well-graded.

And there are many more trails in the park. The Potomac Appalachian Trail Club of Washington, D. C., publishes a booklet, *Circuit Hikes in the Shenandoah National Park*, which describes 20 "circuit hikes," ranging in length from 3½ to 15 miles. These have been designed to answer a common question around Trail Club headquarters: "What is a good one-day hike in the park?" They are sufficiently varied, both in length and difficulty, to satisfy the experienced hiker as well as the beginner. As their name says, each forms a circuit, so that you can park your car at a particular point and follow a trail, or series of trails, that will bring you back to your starting place with little or no retracing of your route.

The greatest number of trails, the highest mountains, and the most interesting things to see are in the middle section of the park—the section that lies between Panorama on the north, where U. S. Route 211 crosses the Blue Ridge, and Swift Run Gap on the south, where U. S. Route 33 crosses. This is also the most popular part of the park and, naturally, the most heavily travelled stretch of the Skyline Drive. But heavy traffic on the drive shouldn't bother you much if you are hiking, for the trails are usually used by few. Once you get several hundred yards from the drive, automobile traffic and noises no longer exist.

Skyland and Big Meadows make good bases from which to use the Shenandoah Park's trails, Skyland, to me, being somewhat the better. This is a resort operated by the Virginia Sky-Line Company under a concession from the National Park Service. It is located on the Skyline Drive 10 miles south of Panorama. There is a lodge, with a good dining room and enough multiple-unit cottages scattered under the trees and along the ridge to accommodate 300 persons. Skyland has been here for a long time. George Freeman

Reprinted by permission from the June 1963 issue of *American Forests*, monthly publication of The American Forestry Association.

Commission photo by Kesteloo

The Blue Ridge Parkway is the finest scenic road in the East, and one of the finest in the country.

Pollock became entranced with the rugged beauty of the place and built a camp in the 1890's. He later developed the camp into a mountaintop resort, laid out many trails, and in the 1920's worked hard to have this Blue Ridge area made into a national park. You might say that the park is a monument to him.

If you are staying at Skyland, you can walk to a number of trails from the lodge or your cottage. One of the most popular goes to the top of nearby Stony Man Mountain. This is a "self-guiding nature trail," which means that there are numbered trail markers (35 of them) which refer to items in a guide book that will tell you what you are seeing or what you should look for. This guide book, which is available in a weather-proof box at the beginning of the trail, is published by the Shenandoah Natural History Association.

The trail begins at a parking area just off the Skyline Drive, immediately north of Skyland. The elevation is 3,680 feet. The distance to the top of Stony Man is ¾ mile and you climb vertically only 330 feet. But as you reach the top of the mountain, you see the whole expanse of the Shenandoah Valley spread out 3,000 feet below you. You are standing on Stony Man's forehead. (Stony Man Mountain, which is the second highest mountain in the park, is so named because its profile, viewed from the north, resembles that of a man.)

While the objective of the nature trail may be the top of Stony Man and this, in itself would be enough, much of the hiker's pleasure comes from the complex forest community through which he travels. There are white and red oaks, black locust, butternut (the husks of the nuts were used during the Civil War to dye the homespun uniforms of many Confederate soldiers), white pine and eastern hemlock. You will notice, as you approach the top of the mountain, that

(Continued on page 21)

The Appalachian Trail crosses the Skyline Drive at several points, and is easy to pick up at many of the overlooks, which also provide convenient places to leave a car and enjoy the spectacular scenery.

Commission photo by Kesteloo

The Importance of Conservation Education in the School Curriculum*

By BENJAMIN B. BROWN
Bedford, Virginia

IN stressing the importance of conservation education in the school curriculum, I think it is important, first of all, to evaluate the lasting merit and advantages of conservation as a subject. Is such a subject worthy of a place in our educational systems? Is it a subject deserving national consideration?

Yes, conservation is indeed worthy of every position that it has been given in the lives of Americans. Conservation is not only a subject, a science, a theory, but it is an essential principle in the development of an enriched life and a strong country. Conservation is essential to the American way of life.

The wise use and development of our natural resources ensure a prosperous and productive country of the future, the results of which we are beginning to realize in the form of material wealth. Working with land, water and sunshine, American farmers produce all our food, except game and fish. From the natural resources they supply materials for most of our clothing. "Mines, farms, and forests furnish the raw materials that keep the wheels of industry turning."[1] In this democracy of ours, many Americans owe the opportunities that they have for employment to the natural resources at their disposal.

In this day of "crowded cities and hydrogen bombs" Americans not only look to conservation programs for material value, but we are dependent upon such programs for pleasure, recreation, sport, and relaxation of modern-day tensions. Each year millions of Americans take to fields, woodlands, and the streams of our country to enjoy the great outdoor sports of hunting and fishing. Photographers, painters, and scientists seek not only a livelihood from America's abundant resources, but they find pleasure and relaxation in their work. A quiet walk observing nature's wonders may prove to be the perfect remedy for easing the tensions of a pressured businessman.

As early as 1799 Americans began to understand the great need in conserving our natural resources. Such men as Theodore Roosevelt and Gifford Pinchot of later times had the foresight to give conservation national consideration and to set the foundations for its general and public development.

Today there are numerous organizations continuing the work of Roosevelt and Pinchot, which strive to promote "conservation awareness" and better understanding of the principles of conservation. These organizations see the necessity of a well-informed citizenry, and realize the value of a citizenry which is not only informed of the laws of conservation, but one which understands the basic concepts in the practice of conservation.

The effects of these organizations on the entire country have been startling. At one time the neglect and apathy of Americans toward conservation posed a serious threat to the future well-being of our country. Our wildlife began to dwindle and vanish, our topsoil washed away, and our vast supplies of timber were in danger of being destroyed. Through a constant effort by such organizations working closely with the federal government, America is now on the upward climb. Our conservation programs now flourish as a greater number of people support them and work for a better America.

The question now arises: Is there a need of widening the scope of conservation programs? Are the organizations, local and federal, enough to secure and develop the natural resources of our country? Are such organizations able to carry on the advancement of an ever complicated program of conservation alone?

Definitely not! We can no more depend entirely upon the work of special groups, local, state, or federal, for the continued development of conservation than we can depend entirely upon the mere enactment of laws and regulations for the future protection of our resources.

"Such laws alone will not make us wise users in the present, or thoughtful planners for the future. We must have a public sentiment, and proper individual attitudes to accomplish the purpose for which laws are created."[2] Neither laws nor special groups are able to meet such demands. "We need a citizenry that has an understanding of the principles of conservation of natural resources."[3] To meet this need America must turn to the public school system to perform the task which the non-school agencies can never accomplish.

Since we know the school children of today are the citizens of tomorrow, we must begin training in conservation during their formative years. In no other phase of American life are so many future citizens influenced so strongly as in our public school systems. Proper training explains the "why's" and the "how's" and the principles of conservation to children at an early age. Children familiarized with the laws and the modern practices of conservation can understand the need of such laws and practices. They can readily see the relationship between conservation and good citizenship. As we have learned from past experiences, man tends to obey laws which he understands. Children properly instructed in the sciences of conservation are less likely to question game laws, or ruin their farms as a result of poor soil and forest management. Such children have the foresight to plan for a productive future, and a well-managed country. In general, children who have the knowledge of the principles of good conservation will be the best citizens of tomorrow. Conservation not only teaches respect for our natural resources, but it also teaches respect and consideration of our fellow man.

In past times conservation has not been given a place in our educational programs. Our forefathers did not have the foresight to see the need of such education. "One eminent American has said that boys and girls in rural schools have studied why Hannibal crossed the Alps while the fertile, productive topsoil washed off their own school grounds and home farms."[4] However, conditions slowly changed. Americans began to see the necessity of bringing conservation into the public school system. "In 1933, the National Resources

(Continued on page 21)

*The scholarship-winning essay in last year's contest.

[1] Charles N. Elliott, *Conservation of American Resources* (Atlanta, Ga.: Turner E. Smith and Co., 1940), p. 28.

[2] *Ibid.*, page 635.

[3] *Ibid.*

[4] *Ibid.*, page 625.

A Waltonian Looks at the Essay Contest

By SARAH HILL

Chairman, Conservation Education Committee
Virginia Division, Izaak Walton League of America, Inc.

MAYBE it is because old Izaak Walton is regarded as a kind of spiritual grandfather to all modern day anglers that the Izaak Walton League of America sometimes is looked upon by those who do not know any better as just an organization of dedicated fishermen. The truth is that the dedicated Waltonian is a dedicated conservationist with a genuine concern for the land and its resources, and a conviction that public ignorance and apathy pose more of a threat to man's natural biological environment than do willful resource misuse and destruction.

Analyzing conservation's needs in these terms can lead to but one conclusion. Progress in conservation practices depends upon progress in conservation education. And since it is in the schools more than anywhere else that people devote their efforts *primarily* to the business of education, it is in the schools that conservation education needs most to be encouraged. That is why Izaak Walton League members give voluntarily of their time and money in this most important endeavor.

Seventeen years ago the Virginia State Division of the Izaak Walton League of America began its work to promote conservation education in the Virginia schools through a Wildlife Essay Contest, with the Virginia Commission of Game and Inland Fisheries as its co-sponsor.

In spite of many oppositions, the Wildlife Essay Contest has grown until today it is recognized as one of the most successful of all such essay contests. This success is due not only to the untiring efforts of the Virginia Division of the Izaak Walton League of America and the Virginia Commission of Game and Inland Fisheries, but also to the wholehearted approval and efforts of the Virginia State Board of Education. The Virginia State Superintendent of Schools and the State Supervisor of Science cooperate to the fullest extent.

The Virginia Resource-Use Education Council and the Resource Use Education Committee of the Virginia Academy of Science endorse the activity. The Governor of the State of Virginia, or some other important state official, presents the leading awards personally at a ceremony held at the State Capitol.

One reason there is a need for a special incentive for students to study conservation, and for teachers to teach it, is that any teacher will teach what he, or she, knows and understands best, and there are too few teachers today who know and understand conservation. The Virginia IWLA State Division and its individual chapters are working to remedy this deficiency, too, by contributing money to the Virginia Resource-Use Education Council to be used to give fully paid scholarships to teachers to attend a summer short course in conservation. It is a three-week course offered at V.P.I., William and Mary, and Virginia State College. Geology, soils, forests and wildlife are among the subjects included in the course. Three semester hours (4½ quarter hours) of college credit are awarded for satisfactory completion of the course. It has been extremely gratifying to see that teachers who have taken the course have thereafter been among the most active in enrolling their students in the essay contest. This is unmistakable evidence that the two-pronged effort to stimulate more and better conservation education in the schools is succeeding.

Cooke photo, *Westmoreland News*

Essay writing pays off. Each of these Oak Grove students won a cash prize: Gill Williams (left), Alan Hynson, and Robert Anthony (right).

Last year the greatest participation in the Wildlife Essay Contest was realized, even through the subject—"The Importance of Conservation Education in the School Curriculum"—was felt to be the hardest ever selected. School children in grades 5 through 12 contributed 13,684 essays, which is an increase of 4,200 over the previous year. One hundred eighty-three schools in 106 Virginia counties and towns sent in entries, and fourteen of these schools produced an essay for *every student enrolled in the participating grades!* These fourteen schools received cash awards for 100% participation.

The great increase last year was made in spite of a policy stand taken by the National Association of Secondary School Principals, which had notified its members that it would no longer approve essay contests of any kind. The principal reason given for disapproving essay contests was because "they had little or no educational value."

Every student has to do a certain amount of written work. Regardless of the subject—be it English, History, Science, or even Math—some important facet of conservation can be incorporated in the experience.

Every subject taught can have some aspect of conservation education brought into it. This is a broad statement, but schools in Indiana, Illinois, and Ohio are practicing it, and there may be others. Virginia is working toward an expansion in conservation teaching, and it is certain from the progress already made that the essay contest will help to attain this goal.

(Continued next page)

Some teachers do outstanding work in teaching conservation, and it shows up in their students' essays.

Commission photo by Kesteloo

Commission photo by Kesteloo

Interest in essay writing leads to interest in conservation study and activities outdoors.

We know of one school where students wrote their conservation essays in the Science class and received a grade. Then the essays were given to the English teacher where they received another grade. Two grades, in two different subjects, on one written essay! Teachers in other subjects can do the same, encouraging the student to do better work with the knowledge that the one paper will give him a valuable learning experience, and a grade, in several different subjects.

Opposition to essay and other contests involving students is based mainly upon the nuisance effect of their administration. Obviously, professional educators, from teachers on up, are already overburdened with the regular curriculum and resent additional work heaped upon them, especially from organizations that have an axe to grind. Many contests offered by industrial firms have more promotional than educational value.

Reluctance to approve contests in general is understandable. Sponsors of the Virginia contest took it amply into account, and it was effectively overcome.

Unlike commercial organizations, the League is not promoting its aims for its own profit. Moreover, subjects for the essay contests are selected to allow students to study both sides of a question and arrive at their own conclusions. The League is not trying to sell a particular viewpoint that is controversial, but to encourage young people to become interested in the general subject of conservation.

As far as the workload is concerned, sponsors of the contest ask only that the school authorities bundle up the essays—one grade to a package—and mail them to designated addresses with one copy of a short submission form. The original of the submission form is then sent to the Virginia Commission of Game and Inland Fisheries, with nothing else required of the school personnel from then on. Not asking the teachers to cull out any essays submitted by students makes the sponsor's job of winnowing through them a big one, especially when the aim for this school year is reached. For the 17th Annual Wildlife Essay Contest the goal is 17,000 essays and at least 17 schools with 100% participation.

The subject this year is "What I Can Do Now, and In The Future, For Conservation." It is hoped that this subject will cause the students to think and also use their imagination. If so, we should gain many good, and perhaps some new, ideas.

Waltonians do all the preliminary judging of the essays. With eight grades entered, eight Izaak Walton League Chapters do the work, one chapter assigned to each school grade. They select the top essays in each grade. The final judges consist of Dr. Franklin Kizer, Supervisor of Science of the Virginia State Board of Education, with 13 of his staff members, and also representatives of the I.W.L.A. Virginia State Division and the Virginia Commission of Game and Inland Fisheries. They select from these top essays, first, second, third, fourth and fifth place winners in each grade and a scholarship winner from the qualifying high school seniors.

Both the laymen and educators agree that it is very easy, when reading the essays, to tell if the student has really been taught conservation. Whether or not the teacher is really interested in conservation, and feels the importance of educating the student in this field, shows up in the essay. A few teachers do show outstanding work and progress in conservation education, and it is reflected through their students' work and interest. It is encouraging that the number of such teachers seems to be increasing year by year.

A great deal is gained by Waltonians from reading and judging these essays. Those that have participated in the judging have remarked that they felt they were better Waltonians afterwards. After all, even though Waltonians are dedicated conservationists now, few of them received any formal conservation education in school, and the ideas and insights developed by serious academic study of conservation by today's students sometimes are profitable to the sponsors as well as to the youth who participate in the contest.

It is felt that parents also gain something from the Wildlife Essay Contest. Viewpoints, interpretations and suggestions from children can be very interesting, and often cause adults to stop and think. In 1962, when the students wrote about the importance of game laws, the essays reflected that they had far more respect for laws than a great many adults. If you have doubts, ask your Game Warden!

Yes, the Game Wardens also play a very important role in the success of the Wildlife Essay Contest and conservation education. In their very busy schedule they still manage to find time to visit the schools, creating interest in conservation education, and encouraging participation in the contest as well as in other educational activities.

It is the privilege of the Game Wardens to bring the top essay contest winners to Richmond for the awards ceremony and luncheon. The luncheon is the responsibility of the League, and plans are to have the next luncheon at Richmond's Walton Park.

The grand prize is an $800 scholarship. Eight first prizes of $50, eight second prizes of $25, 24 prizes of $15, and 24 honorable mentions of $10 go to each of the grades. Special mention prizes of $5 each are divided among eligible grades in proportion to their participation. Certificates are given to all winners.

Prizes this year, the same as last, total $3,000.00. The I.W.L.A. Virginia Division and the Commission of Game and Inland Fisheries contribute a total fund of $3,450.00, $450 of which covers numerous incidental expenses necessary to promote such a contest. Personal expenses of individual Waltonians who volunteer to help with administering the contest are not reimbursed.

Upon request, the I.W.L.A. Virginia Division is providing material to other State Divisions that are interested in starting a Conservation Essay Contest. It is hoped that soon there will be a National I.W.L.A. Conservation Scholarship in addition to individual State Division scholarships.

VIRGINIA WILDLIFE

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CONSERVATIONGRAM

Commission Activities and Late Wildlife News . . . At A Glance

PRODUCTION GOOD IN FISH-FOR-FUN STREAM. Natural fish production has been good and the total catch nearly on a par with last year in the fish-for-fun section of the Rapidan River on the Game Commission's Ward Rue Wildlife Management Area and Shenandoah National Park. One of the main differences in this year's early season figures was the increase in the catch of native brookies which nearly doubled that of last year. The rainbow catch was down, partially due to a lesser number stocked by the Commission this year, but anglers were reporting a substantial number of 5"-10" rainbows from natural reproduction in the stream.

DUCK SHORTAGE EASING. The persistent drought appears to be loosening its grip on northern waterfowl breeding areas, according to Executive Director Chester F. Phelps, who, as chairman of the Atlantic Flyway Council, toured eastern Canadian provinces this summer to see conditions firsthand. "The water situation was greatly improved," he said, "and those closest to the situation feel that the precipitation cycle is changing back to the wet conditions necessary for adequate waterfowl production." Recovery is expected to be slow and it is doubtful that the ducks will show more than a moderate increase by this fall. The U. S. Fish and Wildlife Service predicts a seven percent overall increase for Atlantic Flyway populations.

Black ducks, which have been on the decline for the past two or three years, are causing quite a bit of concern in the Atlantic Flyway. Poor reproduction is evidenced by a low number of juveniles and since the nesting areas used by blacks were not that seriously affected by the drought, the reasons for the decline are not clear. Black ducks feed heavily on animal matter during certain periods of the year, and the U. S. Fish and Wildlife Service is investigating the possibility that pesticide residues concentrated in this animal food may be affecting fertility.

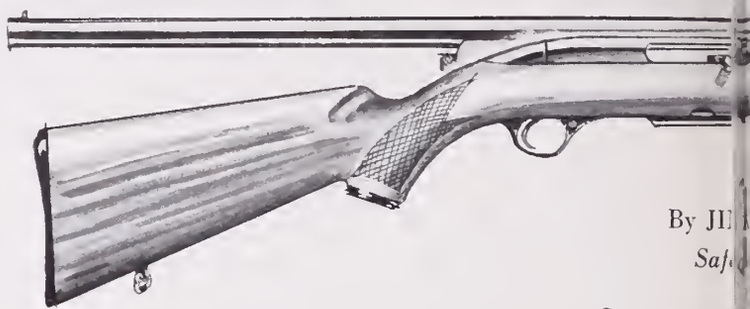
HUNTING FATALITIES DOWN. Hunting fatalities in the Old Dominion last hunting season were 50 per cent below the previous year's level. Hunting accidents for the year totalled 40 compared to 44 for the previous season but fatalities were halved dropping from 10 to 5. Twenty-six of the reported hunting accidents, or 65 per cent, involved a hunter who was nineteen years old or under. This emphasizes the need for hunter safety training for people in this age group.

Fourteen of the 40 accidents were self inflicted and twenty-six were caused by another hunter. Twenty-nine of the accidents involved shotguns, six involved high powered rifles and five involved small bore rifles. Bath County had the worst record with four accidents.

Among the accidents caused by careless gun handling, stumbling and falling with a loaded weapon took the greatest toll followed closely by crossing fences. Only one accident was blamed on a defective weapon. In the accidents where the hunter intentionally pulled the trigger, victims mistaken for game topped the list. Victims moving into the line of fire or out of sight of the shooter were also important causes of this type of accident.

Squirrel hunting was the most dangerous sport accounting for 10 of the accidents, two of which were fatal. Deer hunting ran a close second resulting in 8 accidents and two fatalities. Even rabbit hunting wasn't much safer with eight accidents and one fatality. No sport was completely safe as accidents happened while hunting turkeys, coons, bobcats, quail, crows, bears, doves, skunks, blackbirds and even wild dogs.

A TWO PAGE SAFETY S



By JI
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Hunting is not a particularly dangerous sport, but it could be safer. Around 400,000 licensed hunters take to the fields, woodlands and marshes in Virginia every year. Last year 40 were accidentally shot. There were five fatalities.

As our state population expands by leaps and bounds, and as it becomes more and more an urban population, there will continue to be an ever increasing number of hunters who are less familiar with firearms and their use than were most of the hunters of past generations. Boys just do not grow up in circumstances that make the handling of guns a daily affair any more. Most of them today need formal instruction before they can be expected to handle firearms safely in the field.

Two years ago, in cooperation with the National Rifle Association, the Commission of Game and Inland Fisheries instituted a statewide hunter safety training program. Today, as a result, there are a thousand trained and certified safety instructors throughout Virginia who stand ready to conduct a hunter safety course wherever and whenever a class of volun-

Be sure your bore is clean. Make it a practice to look down the barrel of your gun prior to loading, and before moving on again if you should stumble or fall. Any obstruction such as snow, dirt, wasp nest, cleaning patches or twigs can cause a gun barrel to explode when the gun is fired.

This is the way hunters should carry their guns when walking abreast. Nobody will be hurt here by an accidental discharge.

Carry your gun so that you can control the muzzle all times, even if you should stumble.

When you jump a ditch or other obstacle, you cannot control your gun adequately while you are in the air or when you come down. If you must jump, unload first.

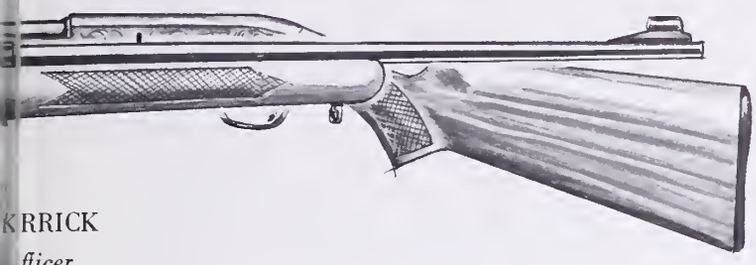
When you stop for a break, unload your gun and place it in a position where it cannot fall. Untended loade guns have a way of causing tragic accidents.

When carrying or using a gun in a boat, keep the muzzle pointed in a safe direction and don't use your gun as a boat hook.

Shooting at the surface of water, quarry wall or other solid objects can cause a bullet to ricochet. You cannot predict the path a ricochet bullet will take.

Loaded guns placed against such an insecure rest cou easily fall, causing an accidental discharge with inju to yourself or other members of your hunting party.

HORT COURSE



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os by Kesteloo

teer students desires such instruction. Thousands of young hunters already have taken the training, and not one who has done so has become a hunting casualty. The number of accidents was lower last year than the year before, and the number of fatalities was halved.

Schools and organizations desiring to sponsor a hunter safety course in their localities can make the necessary arrangements merely by making their wishes known to their game warden, or to the Commission's Safety Officer in Richmond.

For those not already familiar with the course, the pictorial summary on these pages will show what it is all about. For those who have taken it, here is a reminder and refresher to study. But this is no substitute for the full four hour course of instruction. If you have not had the course, why not make arrangements to take it now? It can save lives —maybe your own!

rossing a fence with a loaded gun in this manner uld result in injury to yourself or to your partner. Do t cross any fence with a loaded gun in your hand.

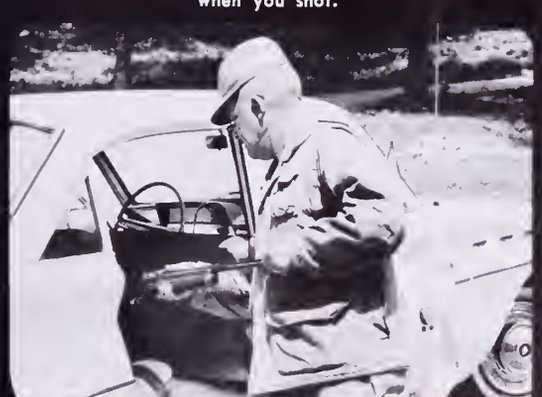
When two hunters cross a fence, one hunter should hold the unloaded guns while his partner crosses the fence, then hand the guns over the fence. If alone unload your gun and lay it down.

entify your target, and *know* where other nearby hunt- s are. Speak to your companions frequently when visi- lity is obstructed, and never shoot at a mere move- ment in the brush.

When swinging on game be sure that you do not "follow" it with your gun as it passes between you and another hunter. It is better for you to go home empty handed than to explain to the widow of your hunting companion that in the excitement you did not see him when you shot.

Be sure your line of fire is clear of people, buildings and livestock. Pass up this kind of shot, and let the game go. It's better to leave a live rabbit in the field than a wounded cow.

ur gun should be placed in the car with the action en and the muzzle pointed away from you. Handle your gun by the stock.



The muzzle of your gun is not to be used as a handle. Handle your gun by the stock. Keep your muzzle pointed in a safe direction.

Alcoholic beverages have no place in the hunting field; and don't take "one for the road" after the hunt either if you have to drive home.

SUCCESSFUL HUNT?

IT was the last day of the hunting season and the early morning air was crisp and cool with the pleasant odor of pine trees and damp leaves permeating the air. Up a distant hollow could be heard the chunk-chunk-chunk of a pileated woodpecker searching for insects and grubs in a dead, hollow tree.

As the bowhunter moved slowly up the dim trail that led alternately through laurel, scrub oak and pine, he could hear the musical sounds of a tiny creek, swollen by a recent rain, about 50 feet to the left of the trail. Occasionally he would catch a glimpse of a chipmunk. At one point he stopped and watched. The tiny, striped-back bundle of energy, tail erect, emerged from a hole in the middle of a rotten log. He ran the length of the log, stopped, stood up and looked around. Everything appearing to be in order, he scurried about five feet from the log, stopped, stood up, looked around again, quickly got down on all fours, dug madly in the leaves for a few seconds and came up with what looked like a severe case of the mumps. Actually, he had an acorn in each cheek pouch which he hurriedly deposited in the rotten log along with the many others he had gathered in preparation for the day when snow would blanket the woods. This little bundle of fur was highly nervous, having to maintain a constant vigil against the hawks, owls, bobcats, snakes, and other predators who would consider him a tasty meal.

His curiosity satisfied, the hunter continued along the trail. Here and there could be seen the hoof prints of deer, the quarry he was seeking, and at one point he noticed a small sapling that had some of the bark rubbed off by a buck who had been polishing his antlers. He had just rounded a slight bend in the trail when all of a sudden, wwhhrrrr! A grouse took off like a jet from almost beneath his feet. Words cannot express the element of surprise experienced by a hunter when this master of explosive take-offs rockets into the air from under his very nose.

The hunter's composure partially regained, he continued his hunt. Up ahead, and about 75 yards to the right of the trail, was a small clearing with a water hole at the far end. The clearing was bordered by various species of oak and laurel thickets, and on the end near the water hole was a tangle of greenbriers and wild grapevines. The clearing itself was covered with a growth of tall, dead, grayish-brown grass and weeds, and patches of tender green clover that had not yet been killed by the recent frosts. Near the center of the clearing grew a small clump of bushes.

The hunter, moving stealthily as possible and taking advantage of the available cover, very cautiously approached the clearing. After reaching a point from which he could survey it, he very slowly looked about. In the early morning gloom, the clearing, at first glance, appeared to be empty, but a deer, even though a comparatively large animal, can be very difficult to spot when standing in weeds and dead grass that blend so perfectly with his gray winter coat.

Just as he was about to step from cover into the clearing, thinking it was empty, he saw the telltale flick of a white tail on the far side of the clearing, about 100 yards away. At the same moment, the deer raised its head and the hunter got an electrifying view of an enormous rack. The slight breeze was blowing from the buck toward him and as the deer lowered its head to continue feeding, the hunter, his heart pounding madly and his mouth suddenly very dry, slowly ducked down. He knew his only chance of getting a shot was to crawl through the weeds and grass toward the clump of bushes in the middle of the clearing. Could he crawl the approximately 45 yards to the clump without being spotted? Would the wind suddenly change before he could get close enough, and thus betray him? Would he make some slight noise that the sensitive ears of the buck would hear? He knew he would have to keep completely out of sight. When he finally reached the bush and raised up to shoot, would the buck still be there? These thoughts went racing wildly through his mind and by this time his heart was pounding so hard he thought it would surely be heard by the buck.

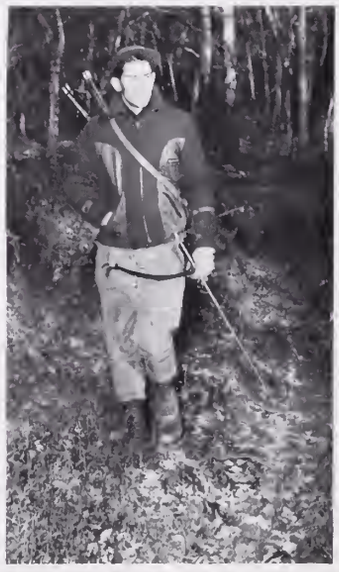
With bow in one hand and an arrow in the other, he got down on his stomach and started the long crawl. While moving through the weeds he was thankful that he had remembered to put brush buttons on his string.

After what seemed like an eternity, he finally reached the clump of bushes. Moving very slowly and carefully, he raised himself enough to peer through. He was in luck. The buck was still feeding and had moved only slightly to the left and a bit nearer the protective cover of the woods. The hunter estimated him to be about 55 yards away. Unconsciously the thought entered his mind that he would have to hold about a foot over the deer's back, the same as he would have to hold to hit No. 3 target back on the club's field course.

Very slowly and taking care not to snap a dead twig or crush a dry leaf, he eased around the bush just enough to get a clear shot. The buck's head snapped up as he caught the movement. Moving in slow motion, the hunter raised his bow and drew the 28-inch shaft to the corner of his mouth and released. The feathered shaft flashed toward the buck's massive chest. It was a perfect—miss!

As so often happens in bowhunting, the buck catching sight of the bow snapping forward, seeing the movement of the arrow as it started on its flight, and hearing the twang of the bowstring, miraculously leaped forward just before the arrow reached him. In three tremendous bounds he reached the protective cover of the woods and could be heard crashing through the brush as he put distance between himself and the hunter, probably a very embarrassed deer having been, in effect, outsmarted.

By this time the sun was beginning to peek over the ridges, its rays shining through the trees, giving the forest floor the appearance of a gigantic camouflage carpet. As the hunter moved quietly back down the trail to camp, he had a great feeling of peace and satisfaction. Satisfaction? Yes. He had enjoyed the fresh clean smell of the forest, watched the antics of the busy little chipmunk, was scared out of his wits by a grouse, and successfully stalked a wise old buck. To this hunter, success could not be measured in the amount of meat brought into camp, something that is soon forgotten, but in the memories of the hunt—memories that last forever.



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PUBLIC HUNTING ON INDUSTRIAL FOREST LAND

By LON DILL
Public Relations Manager
The Chesapeake Corporation of Virginia

IS it unreasonable to ask hunters to pay for the use of hunting lands?

The Chesapeake Corporation of Virginia, one of the State's large land-owning industries, debated this question over a long period before deciding to open its tracts to hunters last year.

Prior to this time, permits to hunt on Chesapeake lands were given only to employees and to a very few other friends of the West Point pulp and paper company. The public in general was not allowed this privilege. Some individuals—again, a very few—hunted on the company's tracts without permission.

Chesapeake's management was ready to change the policy of "closed lands." It recognized the fact that an expanding population wanted outdoor recreation. As long as the use of the land for hunting did not interfere with timber growing, Chesapeake was willing to help meet the need.

Was it unreasonable to ask the beneficiaries of this prospective change in policy—the hunters themselves—to help defray the additional cost that would be borne by Chesapeake if the change was effected? The cost, for example, in extra personnel, additional access roads, continuous wildlife maintenance?

To get a look at some of the problems involved in inviting the public to use Chesapeake lands, the management in 1960 opened a fraction of its holdings free of charge to hunters. The "open lands" consisted of 3,000 acres in Surry County and 2,600 acres on the Campbell-Bedford boundary. Both tracts are rather remote from the "neighbors" of the company's mill in Tidewater Virginia. But enough hunters visited the lands in the 1960 and 1961 seasons to reassure the company that their presence presented no hazards.

The excellent response of the hunters—and the opinion of many interviewed by Chesapeake personnel—convinced Chesapeake that if it went into a full-scale program, they would cheerfully pay a modest fee for the use of nearly 150,000 acres in many locations instead of the two small tracts that had hitherto been available.

For the 1962 season, the company set up a program based on annual leasing of some lands to hunting clubs, and on opening of all other lands to the public except those reserved for company and employee use. To administer the program, Chesapeake engaged Ernest R. Atkinson, of Tappahannock, a retired game law enforcement officer.

When the 1962 season ended, the company was leasing approximately 11 per cent of its 200,000 acres in Virginia to hunting clubs for 40 cents per acre per annum. It had reserved about 17 per cent of these lands for employee, staff or experimental use. It had opened the rest to the individual hunter on the basis of a permit costing $2 per annum.

Chesapeake and its president, Sture G. Olsson, an ardent hunter, believe that the program has worked well. Fewer than three per cent of the comments received have been adverse. Some came from individuals who had hunted on the company's lands without permission. To quote just a few of the favorable comments:

From a Bedford County resident: "I would like to express my thanks to you and your company for granting me a permit. . . . I had a lot of pleasure and contentment while hunting. . . . You have some beautiful land and timber, and it was a pleasure just to walk over it."

From a Richmond County hunt club: "At our last meeting we voted to again lease land from the Chesapeake Corporation for next year. . . . We are also interested in conservation and have discussed the possibility of working with your staff in planting lespedeza or other cover for game. . . ."

From a Newport News hunt club: "We would like to take this opportunity to thank you and the Chesapeake Corporation for your consideration in making land available for hunting. The past season was a very enjoyable one for us, and we are looking forward to next season."

From a Buckingham County resident: "In this age when hunting privileges are being curtailed to a great extent, it is nice to know that one corporation is willing to give the hunter a break."

Chesapeake's management prides itself on reasonable foresight in matters connected with the pulp and paper business. Here it went into something that is not part of that business, but rather part of the problem of outdoor recreation. Nonetheless, Chesapeake believes that it has looked ahead to what will become the rule in outdoor recreation not many years from now.

The federal government is looking ahead along similar lines. In last February's issue of *Outdoor Life*, Arthur Grahame, the veteran field reporter for that magazine, quoted federal officials as believing that "it is only a matter of time before a charge for recreational use will be established" on lands owned and administered by the national government.

Such fees were recommended in the three-year study report of the Outdoor Recreation Resources Review Commission. And Edward C. Crafts, director of the new Bureau of Outdoor Recreation, said in a recent speech before the American Pulpwood Association in New York that all landowners could well adopt the concept of payment by the public for lands that the public can enjoy.

An indication of sentiment on this proposition appeared last spring in the results of a nation-wide opinion survey conducted by a group of professional consultants for American Forest Products Industries, Inc., of Washington. The survey showed a variance of opinion regarding whose lands were to be the subject of the charges.

Each person interviewed was asked: "Would you be willing to pay for the use of these facilities, or not?" The tabulated percentages of response came out like this:

Would be willing to pay to use	*Yes, would pay*	*No*	*No opinion*
Farm-owned lands	66%	23%	11%
Industry-owned lands	59	28	13
Government-owned lands	50	39	11

So half or more of the individuals in all sections of the country are receptive to the idea of paying for the recreational use of someone else's property. A poll of hunters only undoubtedly would show a much higher percentage in favor of a fee for the privilege. That, at least, is Chesapeake's belief, based on its experience to date.

Chesapeake's experience has been encouraging. The response from hunters has been good. The company believes the fees for hunting tend to give them a sense of personal responsibility as sportsmen for their stake in helping to maintain the woodlands for recreational purposes.

What a person pays for—even though payment involves a nominal sum—he usually values. What he receives for nothing, he usually undervalues. That, briefly, is the basis on which Chesapeake's "open lands" policy has been built.

SAFETY ON THE BOTTOM

By LIEUT. HARRY E. RIESEBERG
Paradise, California

There's gold and silver, pieces of eight and other treasure in the offshore shallower waters of Chesapeake Bay and its tributaries, even off the coastal waters of Virginia in long submerged shipwrecks, waiting for the experienced SCUBA and skin-diving enthusiast—if he follows the rules of safe practice.

IN the shallow depths a few fathoms beneath the calm surface less than a mile and a half off Fleeton Inlet, Virginia, where the outflowing waters of the Potomac river join the surge of Chesapeake Bay, a slowly moving underwater shadow could be seen quite clearly from the small motor boat wobbling above. Some small-fry fish scurried frenziedly in all directions to escape the strangely-clad intruder with man-made gills of metal strapped to his back and elongated flaps attached to his feet. The strange intruder was a member of the human genus SCUBA (Self Contained Underwater Breathing Apparatus). The figure came on at a slow, but steady, almost plodding pace.

Suddenly the figure paused for a brief moment, sending the frightened fish into a new frenzy. The eyes behind the windowed face-mask peered scrutinizingly about the surrounding bay bottom, seemingly searching for something. Then, like the ancient Archimedes of old, when he discovered how to determine the purity of gold, the underwater being might have exclaimed, *Eureka!* For, at that moment, something had been discovered! It was a heavily barnacled section of a long-submerged vessel which had sunk about the time James Watt first began to coin the word "horsepower." The SCUBA diver of the 1960's moved forward straight toward the rotting ship's timbers from the 1800's. He was quite surprised that the wreck's remains had so thoroughly disintegrated—even in such calm waters.

With his bare hands, he began to rake the muck and sand around the broken mast stumps and spars of wood. After some effort he soon had unearthed small pieces of metal, a huge iron ship's stack and considerable other scattered debris of wreckage. These were interesting relics and artifacts of the old wooden steamer's remains, but they were useless and not the salvage he had sought.

However, after some fifteen minutes, a long burst of aerated bubbles broke from his mask, as he emitted an excited and muffled underwater cry. For there, directly before him, less than ten inches below the former bottom level, was a dull brown metallic bar. He excitedly sought some hard object, found a nearby oyster shell, then bent over his find and scratched at its surface. The bar gouged easily, exposing a bright yellow interior. The SCUBA diver had no doubts now as to what he had found. *It was gold—a solid, cast ingot of pure, crudely smelted gold!*

As he peered at it in elation, he felt some of that exuberance which the prospectors felt in those bygone days of the gold rush in California, Alaska, the Yukon and the Klondike diggings. He knew this was not an isolated discovery; there *must* be other like ingots—many others—buried deep in the very muck and sand on which he now trod, for no ship would have carried just one gold bar. He hefted the ingot; even with the buoyancy provided by the water itself it was quite heavy. After managing to rig up a small sling about the oblong piece of metal, he used every muscle to make his way upward to the boat and air-breathing world above.

Then, once he broke the surface and flipped back his mask, his shadowy identity underwater became revealed as Bob McIntyre, an experienced SCUBA diver who truly does his underwater exploring and prospecting for both recreation and profit.

As he boarded his rented 22-foot inboard boat, manned by his wife, Dolores, also an expert skin-diver, she seemed ready to turn on the motor, pick up the anchor and head for shore—chalking up another afternoon of skin-diving to fun rather than profit. But, on this day the boat remained at anchor until near sunset and Bob and his wife were too excited to eat even a late luncheon which they had brought along. For, Bob, having left the ingot aboard, began diving again.

Five times he returned to the surface and the boat, each time with more finds, more gold ingots and many pieces of eight. Numerous other relics and many artifacts were also unearthed from the muck and sand of the bay's bottom, and by the time the last traces of light had vanished from the

A SCUBA diver surfaces after searching for remains of sunken wreck. Note divers' flag on float, warning boat operators to stay clear.

depths, a huge cache of gold and silver treasure had been found and hoisted to the boat.

It had taken Bob McIntyre only a few moments to locate the exact site at which the old Spanish galleon-frigate craft had been sunk and disintegrated so many years before. The relics of the broken masts and spars and the huge ship's stack attracted his attention first, these being the remains of a more recently-sunk vessel. But locating the gold ingot marked the final resting place of the earlier wreck's remains, one of a more prized treasure—and too, more profitable. The name, time of sinking, or any other historical information were unknown, but the underlying relics and artifacts recovered were probably those of one of the early Spanish galleon-frigates which carried riches from the New World to the Old during the seventeenth century which had presumably lost course

and strayed northward into Chesapeake Bay. For several centuries, numerous Spanish and other such craft were wrecked off the mouth of the bay, while seeking return routes eastward with poor charts and navigation.

However, in all. Bob M Intyre's single day's underwater salvaging search had brought him a healthy return in real treasure—and that's mighty good gold fishing!

Yet this is only a single instance of a SCUBA diver unearthing from the bay's bottom treasure underwater, employing a relatively small open motor boat, inboard or outboard. It is happening quite often along the countless river mouths, beaches, offshore islands of Chesapeake Bay and its outer waters, from time to time, for experienced skin divers have made a recreational avocation both adventurous and often most profitable from this bizarre field of endeavor. Not much news is spread on any underwater find because modern treasure-hunters are similar to their bygone counterparts; that is, the secrecy of location and discovery is seldom divulged publicly for various reasons which need no explanation herein.

With the latest lightweight air tanks and other recent developments in equipment, SCUBA and skin-divers today have a far better method of reclaiming sunken treasure from out of wrecked ships in these waters than previously. Today, the depth to which a SCUBA diver is capable of descending in his apparatus is limited to approximately 50 fathoms or 300 feet maximum. And, as every diver knows, a fathom is equal to a depth of six feet. However, at a depth of 300 feet, all but the most experienced professional divers would be risking their lives; in fact, even 200 feet can be most dangerous in some of these waters. *Safety should be the watchword of all SCUBA and skin-diving enthusiasts* whether they seek treasure or mere recreation in underwater exploration. Most qualified SCUBA divers can seek treasure in such wrecks with reasonable safety if they remain *above* the *200-foot* mark.

If an enthusiast in this field of endeavor is also a well-trained SCUBA diver and swimmer—and today there are estimated to be more than six million in the United States and Canada—and he or she has a swashbuckling spirit of adventure, there are literally millions of dollars in *real* treasure to be found in the waters of Chesapeake Bay and its outer environs. Literally, tons of gold and silver in ingot, specie and bullion form, as well as other valuable relics and artifacts, still rest unsalvaged in the shallow waters along this vast stretch of shoreline.

As far back as the mid-sixteenth century, many more hundreds of ships have been lost in these coastal and inland waters than is generally known by the public. These sunken ships range from the early Spanish and Portuguese treasure-bearing galleons, each laden with millions in bullion and specie, to freighters and tankers, whose only tangible assets to the salvage seeker are the strongboxes containing hard cash for the payment of the crew and operating expenses. And even if one doesn't find gold and silver or other such precious caches in his explorations, he can partake of the salvage money that is offered on hundreds of wrecked vessels of more modern vintage by the maritime insurance companies. Rewards are often offered for just an accurate marking of the resting place of a wreck, substantiating that it is in a reasonable area and position for salvage recovery by the commercial organizations. This method is naturally not as lucrative as an actual independent recovery, but it provides eventful adventure and will more than compensate for the cost of equipment and vacation needs.

Too, in some parts of these waters—especially those from Mobjack Bay to Cape Charles and north to Chincoteague and the offshore waters—World War II has left a chain of sunken cargo ships which stud the bottom. The serious minded student of SCUBA treasure-hunting can hardly miss finding them. Their treasure, though small compared to the large sea-going vessels, still runs into many millions of dollars. In fact, off the Virginia Capes there still rests the larg-

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Sea-chest (better known as a "treasure chest"), after encrustations had been removed, from one of the green ghosts of the past which contained relics and artifacts salvaged by the author.

Some of the treasure salvaged off Fleeton Inlet, Virginia, from the resting place of the wreck of an ancient Spanish ship. Ingots are gold; sacks contain pieces of eight and other coins.

Orange County's New Lake

By DOROTHY E. ALLEN
Education Officer

THROUGH the interest and energetic action of some farsighted citizens and the Board of Supervisors, Orange County is going to get a brand new public fishing lake of nearly 100 acres on Clear Creek, built by the Commission of Game and Inland Fisheries at a construction cost of about $1,000 per acre of fishing water.

In October of 1962 the Commission of Game and Inland Fisheries announced it was interested in locating future public fishing lake sites in areas where a need existed. The Commission has allocated $100,000 per year for the construction of such lakes during the biennium. A survey was made to determine the amount of fishing waters available in each county, to relate available fishing areas to human population density, and to locate suitable sites for the construction of additional public fishing lakes where the greatest need was found.

The Orange County Chamber of Commerce, the Industrial Development group and interested citizens learned of this new program through their Game Warden, J. W. Crickenberger. Residents of Orange had longed for a lake near home to fish. The nearest impounded fishing water was 40 miles away. An area population of 57,300 could cast lines in 482 acres of impounded fishing waters, or 119 people per acre of available fishing waters—a bit crowded, to say the least. When they heard that the Game Commission was looking for a site that could be developed into a productive lake in a locality where people had to drive some distance to fish, they formed a committee to locate a suitable area near them. This committee of three men, Henry C. DeJarnett, Clerk of Orange County Court, Myer R. Pickett of Orange Development Corporation, and Edward Sparks of Orange Chamber of Commerce, immediately thought of a stream called Clear Creek which had long been admired for its sparkling water.

Located five miles southeast of Orange and 75 miles from Richmond, Clear Creek runs through a wooded area that is not very productive of anything else. The land, known as Oak Spring Farm, had been sold over and over again. All attempts to farm the land have met with frustration, mainly due to the acidity of the soil.

Warden Crickenberger and Fish Biologist Jack Sheridan obtained the latest quadrangle map of the area, and from the map determined that the area was promising from the standpoint of drainage area to lake ratio.

Examination of the contour revealed that a lake of 95 acres could be obtained with a dam height of 35 feet and a dam length of approximately 1,200 feet. Further engineering survey showed this site could be developed economically. Excessively high dams are too expensive to construct in most instances. The design of the dam and its overflow structure will incorporate features allowing the draining of the bottom water[1] as well as the normal safeguard of emergency overflow spillway.

It is expected that the earth dam at Orange County Public Fishing Lake will contain approximately 100,000 cubic yards of clay and the preliminary engineering cost estimate is $95,000. This will provide for clearing the lake area and deepening the shoreline at these places where the natural slope is less than 10 horizontal to 1 vertical. It also provides for a concrete seining box at the lower end of the overflow drain pipe, and approximately ¼ acre holding pond, for use when the pond has to be drained at 5 to 7 year intervals to meet fish management requirements.

The Orange County Lake Committee obtained the lake site by having the local owners turn the land over to the Game Commission for public use.

History Of The Orange County Lake Site

Ninety percent of the land being inundated has long been called Oak Spring Farm, or the Colonel Dan Porter Farm, an estate of 734 acres. Before Colonel Dan, the place belonged to his mother and was then called the Daniel place. Dan Porter fished in Cedar Creek, raced up and down the steep ravines, and probably hunted quail nearby. When World War I came along Dan left Oak Spring Farm and became a colonel.

After the war he returned home and raised trotting horses. Residents of Orange remember Colonel Dan as a colorful character who helped make Orange a thriving community. He was instrumental in establishing the first silk mill there, and in the building of the President Madison Inn, famous for its southern hospitality and food. Colonel Dan was the first man in Virginia to commercialize hams which are now world known as Virginia cured.

He was a politician and served two terms in the legislature. During that time he became a good friend of Carl Nolting, Chairman of the Game Commission, and John Q. Rhoades of Louisa County. Because of his love for nature and his friendship with Carl Nolting, Colonel Dan became interested in the conservation of natural resources.

Unknowingly, Colonel Dan Porter helped prepare the way into this new fishing site. The roads leading to Orange County Public Fishing lake, Route 629 and Route 600, were made possible due to the Byrd-Rhoades Bill, enacted in 1932. This bill, sponsored in the legislature by Porter and Rhoades, provided for allocation of highway funds for secondary roads, and made possible the construction of the roads which now will provide access to the public fishing lake on Colonel Dan's old home site.

Nearly all of the new lake will be on Oak Spring Farm. An estimated 80 to 90 acres has been given to the State for the development of Orange County Public Fishing Lake. The residents of Orange, who remember the former owner, are certain that Colonel Dan would heartily approve.

At the present time there are 15 Commission owned and controlled lakes in Virginia. Lakes require management if they are to provide good sustained yield fishing for the public. Past experience has proved that a properly planned and constructed lake will provide a great deal more good fishing with less attention than one that is just built in the so-called "likely looking area." A well managed lake constructed on a properly selected site can be expected to yield between 125-200 pounds of fish per acre per year, at an average catch rate of 1 pound per trip.

[1]A pipe two to four feet from bottom of lake will lead up into the overflow tower, so the bottom water of the lake will overflow into the tower. Thus, low oxygen water is taken away by overflow, while high oxygen top water is retained.

SHENANDOAH TRAILS

(Continued from page 9)

the mountain maple and the striped maple have practically become shrubs. At the very top, the trees are gnarled and dwarfed, and lichens grow on their trunks as well as on the rocks.

Stony Man, with its Shenandoah view, is orientated toward the west. Another trail in the Skyland area goes down the eastern slope of the Blue Ridge, descending into the steep Whiteoak Canyon. This is a much more difficult trail than that up Stony Man—the trip down to the first waterfall and back covers five miles, and the way back is a long, hard pull. It's best to allow a full half-day.

But it's worth it. Whiteoak Canyon has been aptly called "the scenic gem of the Shenandoah National Park." Starting with the first waterfall, which is about 2½ miles down the trail, the stream drops 1,500 feet in a mile, with six cascades, each more than 50 feet high. The deep canyon is thickly forested with white oak, hemlock, poplar, and ash. Speaking of hemlock, there is a group in the "Limberlost," not a mile below the start of the trail, which are the most impressive trees I have seen in the East. Each is over 400 years old and at least three feet in diameter. The Limberlost was named by Freeman Pollock, after Gene Stratton Porter's novel, *A Girl of the Limberlost*, one of the sentimental Mr. Pollock's favorite books. Even if you haven't the time or the energy to go all the way down the Whiteoak Canyon Trail to the Waterfalls, by all means go down as far as the Limberlost and then take the cross-trail to the right which will bring you back to the Skyline Drive by a circling route.

Four miles south of Stony Man, Hawksbill Mountain pushes its bulk to an elevation of 4,049 feet above sea level, 39 feet higher than Stony Man and enough to make it the highest mountain in the park. There are two trails to its top. You can take either from the parking place in Hawksbill Gap on the Skyline Drive. One is quite steep, climbing almost 700 feet in ¾ mile; the other is easy, taking almost two miles to climb the same distance. About a mile of the longer route is along the Appalachian Trail which skirts the western slope of Hawksbill.

Hawksbill Mountain is best known for its view. The Shenandoah Valley is spread out below, reaching over to Massanutten Mountain some 15 miles away. But look, too, at the soaring birds—the buzzards, vultures and ravens—that glide and wheel on the thermal currents rising from the valley. Especially note the raven.

He will dive and stall and somersault like an acrobat. And most of the soaring and acrobatics are being performed below you. This is something different. As I heard an old gentleman once say, "I never thought I'd ever look down the back of a buzzard!" Believe me, it's an experience.

South of Hawksbill, about five miles along the Skyline Drive, is a trail that leads down to Dark Hollow Falls which, especially in the spring, is beautiful. It has a sheer drop of 50 feet. The trail is well-marked, and the round trip is a mile and a half. The way back is fairly steep.

Big Meadows, like Skyland, is a mountain top resort area. A rambling lodge, which can accommodate about 200 persons, is operated by the Virginia Sky-Line Company. In addition, there is a large camping area supervised by the National Park Service. The great charm of Big Meadows is in its open fields, once heavily grazed by the stock of mountain people who lived on the Blue Ridge before the park was formed. Tucked away in one corner of these fields is a swamp, and leading to it and through it, the Park Service has constructed a nature trail much like the one on the slopes of Stony Man.

The start of the trail is at the Big Meadows amphitheater which is only several hundred feet from the lodge. The trail is two miles long, is circuitous so that it will bring you back to where you have parked your car, and is easy all the way. The first part is along the Appalachian Trail which gives, through the trees, many views of the valley below. At one point you can step off the trail to Monkeyhead Rock and look back into history. Down, and to the right, you can barely trace the Old Gordonsville Turnpike. Stonewall Jackson crossed the Blue Ridge here for his last time on November 24, 1862, with 25,000 men, about half of Lee's army. He was on his way to Fredericksburg and then to Chancellorsville where, by accident, he was fatally wounded.

Soon, though, you leave the edge of the valley and pass through a ghost forest peopled with the remains of chestnut trees, scrubby and dead and gleaming like silver in the sun. Farther along, the trail reaches Big Meadow Swamp. This is the headquarters of the Hogcamp Branch of the Rose River which is shortly to tumble over Dark Hollow Falls. The swamp, except in late summer, is lush, and even then there is a great variety of flowers. When I was last there the yellows were predominant in numbers, but the most striking was the cardinal flower, a vivid splash of red which, as far as I can recall, I have seen nowhere else in the Shenandoah Park.

These are just several of the Shenandoah's trails. You can take them by yourself and have the time of your life, or if you like to travel with a party, you can go on a conducted hike led by a park ranger to any, or all of them. And, as I have said, there are many more. The Potomac Appalachian Trail Club, which publishes the booklet on circuit hikes, also publishes a 307-page book on the trails in the Shenandoah National Park. It gives detailed descriptions of all the trails in the park and other useful information. These books, and trail maps, are all available in the park—at the Dickey Ridge Visitor Center and at Skyland and Big Meadows.

THE IMPORTANCE OF CONSERVATION EDUCATION IN THE SCHOOL CURRICULUM

(Continued from page 10)

Committee was created; the United States Commissioner of Education has urged that conservation be emphasized in the educational programs of every school in the nation."[5]

In spite of every effort made by those who wish to advance conservation and make it a subject known to all, there is still much neglect in the drive to make it a part of every educational program of our schools. School officials often do not see the need of stressing such programs, and the teaching of conservation is often neglected and mishandled by uninterested instructors. Many teachers themselves are not familiar with the basic fundamentals of conservation, and are therefore unable to inspire their students.

This situation presents a challenge that Americans must meet in order to safeguard the future of the United States. It presents a problem with which school officials must cope. The importance of conservation education in the school curriculum cannot be over-emphasized. Without such a program waste and destruction will continue and man and beast will suffer. We can in no way alter the record of the past, but we can take thought for the future, and we can stress proper action in the proper place—the public school system.

[5] *Ibid.*

EDITORIAL

TIME FOR DECISION (Continued from page 3)

become larger, and thus provide more sport in the taking than do hatchery reared yearlings. And it takes much less of a restocking effort to maintain good fish-for-fun fishing, since each fish produces not one but several successful "catches" during a season.

For those fishermen who want to keep some of the fish they catch, and who are not satisfied with the number and size of the fish their trout license now buys, pay-as-you-go fishing may be the answer. Our hatcheries probably could produce as many large trout as such anglers would be willing to pay for.

Fish-for-fun and pay-as-you-go management would put Virginia's few *year around* streams to their best recreational use. Hatchery reared fish still could be used to support put-and-take fishing in the poorer waters, where the only alternative to this admittedly substandard quality sport is no trout fishing at all.

Coupled with expanded fish-for-fun and pay-as-you-go programs, research could do a lot to make trout fishing in this state still better. If our biologists knew why there is low winter survival of hatchery reared trout in our streams, maybe they could do something about it. With more funds for research and development, natural reproduction in some streams might be improved. The introduction of additional exotic species into waters that are now submarginal for native brook trout and rainbows offers possibilities that need investigation.

Trout fishermen have an option that hunters are denied. When a bird is flushed and shot, it is dead. When a fish is hooked and brought to net, it can be released to be hooked and landed again. Anglers who are in search of sport and recreation, rather than fish for the table, enjoy exercising that option in areas where they can be sure that other fishermen do likewise. Those whose main concern is to take fish home with them deserve to be given that opportunity too, so long as they are willing to pay the cost.

—J. F. Mc.

DDT RESIDUES THREATEN TO SPOIL HUNTING

As this magazine went to press, whether the state of California would have any pheasant hunting season at all this fall depended upon the results of a study in progress to determine the extent to which DDT residues are to be found in representative specimens collected throughout the state's pheasant range.

State game biologists reporting their research findings at a recent Western Association of State Game and Fish Commissioners Conference in Tucson, Arizona, have indicated that the high residue levels discovered in a series of pheasants analyzed last year prompted the California State Health Department to insist on the establishment of a pesticide monitoring program prior to the opening of the hunting season this year. Residue levels as high as 2,930 parts per million, and an average of 741 p.p.m., were recorded last year. By comparison, interstate shipments of meat may not contain more than 7 p.p.m. of DDT.

If, in the judgment of public health authorities, DDT residue levels are too high this year, hunting of the birds will not be permitted.

SAFETY ON THE BOTTOM (Continued from page 19)

est treasure-laden wreck of the region, the *Merida*, with its $5,000,000 in golden treasure looted from the Mexican treasury, together with the cursed riches of the Hapsburg puppet emperor of Mexico, still unsalvaged and undisturbed.

Some recoveries in these waters have already amounted to small fortunes in gold and silver, jewelry, imported wines, well-aged liquors and even barrels of whiskey still intact and *really* aged in wood. Chesapeake Bay and its environs are a real treasure-house for the modern-day SCUBA and skin-diving enthusiast.

However, before the treasure-seeking SCUBA enthusiast's adventurous temperature turns to underwater gold fever, he should *always remember* that a truly expert diver in this search never permits his zeal for discovery and retrievement of such riches to carry him beyond the reach of *safe practice*. SCUBA, as well as skin-diving, is like flying, swimming, and skiing; it is excellent recreation but it demands sound judgment, experience and intelligent performance. Literally, a negligent SCUBA diver can get into much deeper danger and peril than he expects.

For instance, in 1946, the French SCUBA diver, Maurice Fargus, descended to 396 feet, but lost consciousness and drowned. Again, in 1953 Hope Root descended to 400 feet, but something went wrong and his fatal dive was continuing beyond the 500-foot mark when his recording instruments gave out. Many others have lost their lives by not heeding the *safety rules* of the sport. Today the record for the deepest depth of a successful SCUBA dive is held by John Clark Samazan who reached 350 feet, and returned safely.

The average SCUBA and skin diver should remember these rules and be able to resist the detrimental effects of too much water pressure by staying *above the 200-foot mark*. A novice, descending to a greater depth, faces serious peril, even loss of life. His mind may remain quite clear, but he feels as though he has the weight of two bodies and he soon develops the unpleasant taste of rusty iron in his mouth, this caused by the nitrogen collecting in his blood stream. This is both intoxicating and poisonous, and can result in what has been called "*the rapture of the deep*." In this condition, the diver's mind slowly floats off into deadly fantasy, imagery and reverie.

Thus, with clear understanding of the *safety limits* imposed by underwater treasure-hunting, the SCUBA and skin diver next wants to know the *what* and the *where* to search. There is no lack of sunken riches around Virginia's shores, many resting in the shallower waters of Chesapeake Bay and its outer waters. Through proper research, such lists of authenticated shipwrecks—which, by maritime records, were carrying treasure at the time of their sinking—can be compiled. Those who sell purported treasure maps are merely looting the pocketbook of the treasure-hunters. The United States Coast and Geodetic Survey, Washington, D. C., furnishes a chart of Chesapeake Bay and tributaries, showing many of these long-rotted, yet salvable craft for the purpose, which are good prospects, but there are hundreds more—their treasures available to anyone who wants to go down in search of them.

For most SCUBA and skin divers, carrying out a search for sunken treasure in these old wrecks of ships, treasure-hunting can be more exciting—and often lucrative—than mere spearing fish or idly exploring the bay's bottom. Today, SCUBA divers can now go down to the bottom of these shallower waters, from their small craft in search of actual fortunes—*if they follow the rules of safe practice.*

Bird of the Month:

The Killdeer

By DR. J. J. MURRAY
Lexington, Virginia

EVERY farm boy knows the melodius, mournful cry of this bird as it rises from the meadow to fly before him, calling its name, *kill-deer, kill-deer, kill-deer.* If he has surprised the bird from its nest, it will soon stop. Then as he approaches it will, in the effort to entice him away from the nest, run along the ground or fly again for a little distance. If he does not follow the bird but begins a search for the nest, it will go into its "broken-wing" act, falling on its side as if helpless, with wings pulled down and tail spread wide to show its rufous tail-coverts.

Whether this is really a ruse to draw the enemy away, or whether, as most naturalists now believe, it is due to a state of psychological confusion, it is usually effective in deluding the trespasser.

Often the killdeer is a nuisance to bird watchers. Many a time have I tried to slip up on an unusual bird in a flock only to have a watchful killdeer give the alarm and draw all the birds away. So active is the killdeer that it calls freely at night. Along the flats by a stream its *killdeer* call can be heard at any hour, no matter how dark the night, as it runs busily about or even flies overhead.

This familiar bird scarcely needs description, it is grayish-brown above and white below, but strikingly marked with a black patch on the head, a black ring about the neck, and a black band across the breast. The rump and upper base of the tail show a lovely golden red.

The killdeer hardly has a nest. It simply uses a saucer-like depression in the earth or a shallow place on a rocky ledge. Sometimes a few bits of dead wood or gravel line this depression. Four eggs are laid, fitting nicely together with the sharply-pointed small ends to the center, so that they will not roll out of the shallow nest. The base color of the eggs almost exactly coincides with their usual surroundings, so that it is easy to step on them before they are seen; yet I have never seen a set of eggs mashed by cattle. The eggs are covered with black or chocolate spots, heavier at the larger end, which again is a protective marking, appearing like fungus marks on the rock.

These eggs are quite large for the size of the bird. Since the young must be able to leave the nest soon after they come out of the eggs, they are fairly well grown and clothed with down at hatching.

There are few things in nature more attractive than a tiny young killdeer. With a body about as large as your thumb, rudimentary wings, long legs like little match sticks, and soft, beautifully mottled down, it is a charming sight. Little as it is, it is not easy to capture. It can make good time on those tiny legs. Nor is it easy to find when once it has gotten away. It can "freeze" at the warning of danger, to become almost invisible in the gravel or in grass.

Edited by HARRY GILLAM

CITATION FLURRY ENDS SUMMER SEASON

Warden of the Year

William T. Jamison, State Game Warden in Giles County, was selected as Virginia Game Warden of the Year, and was honored, along with top wardens from other southeastern states, at special ceremonies during the annual Southeastern Association of Game, Fish and Conservation Commissioners meeting at Hot Springs, Arkansas, September 30-October 2.

Jamison, 49, has done an outstanding job as Game Warden in Giles County since 1948 when he began his work with the Game Commission. He was a deputy sheriff in Giles County prior to taking over the duties of game warden. He and his wife Lucy reside in Pembroke, Virginia.

Jamison, with the assistance of Game Warden trainee Robert G. Mitchell, has recently received widespread recognition and commendation for hunter safety training in Giles County. Working as a team, the pair organized and conducted hunter safety training classes for the entire Giles County school system.

The Game Warden of the Year is selected from six candidates picked by the supervising warden of Virginia's six game law enforcement districts.

Richmonders Win Cobia Tournament

Foster Studio photo

This 4 member "Panama Marlin Club" team composed of Richmonders copped top honors in the recent Chesapeake Bay Cobia Tournament. Shown with their "hardware" are, left to right, Unis Johnson, U. C. Adamson, Mrs. Ross (Betsy) Walker, and Charles Bowman, all of Richmond. Betsy Walker served as team captain for the group which piled up a total of 1025.5 points, nearly twice the score of second ranking Gibsons Island Club. The Virginia Anglers Club placed third. In all, eight teams competed in the three day tournament, including entries from Bermuda and Pennsylvania.

Buggs Island Striper

Jimmy Watson of South Hill poses proudly with his 15 pound 2 ounce Buggs Island striper which won him a Trophy Fish Citation. An active and skillful fisherman, Watson has accounted for 45 rockfish with a combined weight of 453 pounds from this Southside Virginia Reservoir so far this year.

Bigmouth from Buggs Island

Photo by John Brandon

Waddy Echols, South Hill angler, shows off a 7 pound 8 ounce largemouth taken from Buggs Island this past summer.

Lunker Smallmouth

The Rappahannock River produced this nice 5 pound 9 ounce smallmouth taken by Russell Cranmer, Jr., of Culpeper. He landed his catch on a light tackle outfit equipped with 4 pound spinning line.

First Bow & Arrow Citation

James W. Hullihen, Sr. of Woodstock nailed this 27 pound 7 ounce carp in the South Fork of the Shenandoah River to win the first Trophy Fish Citation for a bow and arrow catch. Mr. Hullihen has been a consistent trophy winner in the annual Carp Shooting Contest sponsored by the Pioneer Archers of Woodstock.

Edited by DOROTHY ALLEN

Citation Fish

Richmond Dispatch-News Leader photo by Briggs
Thomas Wayne Propst, a 14-year-old Binford Junior High student, tied into the unexpected while dangling a minnow in the James River one evening after school. A 15-pound gar fish took his offering.

Owl Pellet Study

Pellets are found under an owl roost, frequently in an old orchard, pine grove, on a woodlot border or open hardwood area. An owl's roost usually is in use over a long period and consequently the ground under the roost may contain many pellets. They look like matted felt with bits of white bone scattered through it. The owl swallows its small victims, and the indigestible parts such as fur and bones are thrown up. Examination will reveal the type of food that the owl has eaten. Species of owls may

Commission photo by Kesteloo
Barn Owl

be roughly identified by the size of the pellets. The larger pellets which are about $1\frac{3}{4}$ inches by 1 inch are the great horned owl's; those smaller are probably the barn owl's. The smallest pellets are probably the screech owl's.

In separating parts of the owl pellet for identification of types of food eaten, tweezers are useful.

Bird

Written by Lois and Louis Darling, *Bird* is a book for all who enjoy wildlife but especially for birdwatchers who wish to go beyond the identification stage. Here are the scientific facts behind the incredible keenness of eye and ear to be found in birds, their dramatic display behavior during the courtship period, their protective coloration, their skeletal structure that makes flight possible, and many other such apparent mysteries equally absorbing.

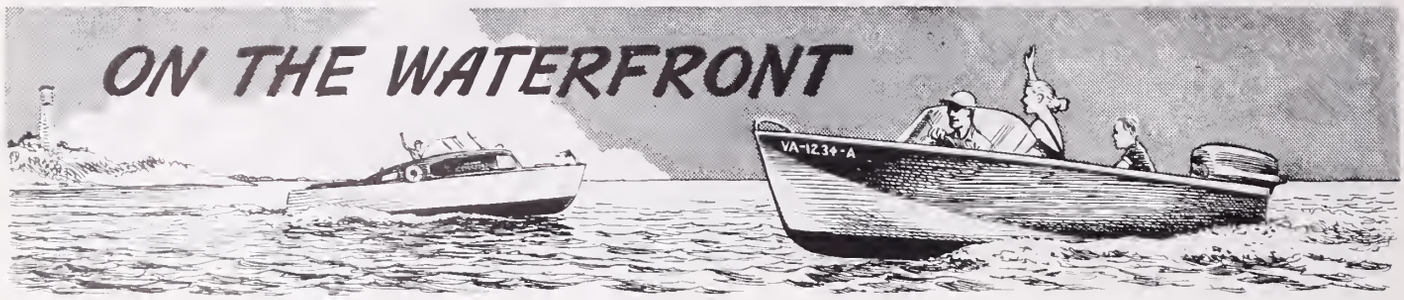
As more is learned about the processes of life, it becomes increasingly evident that all life is an interrelated whole. *Bird* has been written from this point of view. It provides a basic, simplified but scientifically accurate account of the evolution, behavior, anatomy, and physiology of birds and also a comparison of certain features with those of other animals. Its emphasis is on characteristics important to the understanding of broad principles: the essence of bird life in the context of all other life. Houghton Mifflin Company, Boston, Massachusetts, 1962, $5.00.

Forestry Camp

This summer 89 boys ages 14-18 attended the 18th annual Boy's Forestry Camp at Holiday Lake located on the Buckingham-Appomattox State Forest. Scholarships were awarded to boys judged the most deserving from the standpoint of activity and interest shown in sound forest conservation methods. A course in game management was taught by Game Biologist Hal Myers of the Game Commission.

Citation Fish

Richmond Dispatch-News Leader photo by Lynn
John Moser, 8-year-old Richmond lad, out fished many an angler. His 3 pound 1 ounce crappie was one of only four caught in Virginia waters of citation size. Only one other crappie was heavier by 1 ounce and John's $19\frac{1}{4}$ inch crappie exceeded the longest of the other three in length by $2\frac{1}{4}$ inches. All were taken from waters in various sections of the Old Dominion.



Edited by JIM KERRICK

Compartment Ventilation

As more and more boat owners become interested in boating as a family affair and take to the waterways with wife and children for a weekend cruise, the size of the average boat becomes larger and so does the amount of fuel carried on board, whether it be in a permanent or portable fuel tank.

This fact of life brings many boat owners right up against the Motorboat Act of 1940, which contains, among other things, the regulations governing fuel compartment ventilation.

The following definitions are presented as guidelines for determining whether or not a fuel compartment needs a separate ventilating system:

Closed Compartment

A closed compartment does require ventilation. It can be defined as any engine or fuel tank compartment having sufficient confinement so that ignition of fuel vapors within the compartment will create pressures that will damage the compartment.

Open Compartment

Can be defined as an engine or fuel tank compartment having sufficient open or exposed area per cubic foot of net compartment volume so that ignition of fuel vapors will not damage the compartment. The Outboard Boating Club of America recommends that open compartments not provided with a ventilation system have a minimum of one square inch of open area per cubic foot of net compartment volume of floor or bilge level so that fumes will not remain trapped in the compartment.

OBC also recommends that closed engine or fuel tank compartments be provided with a ventilation system which will introduce a volume of air into the compartment in one minute equal to the net compartment volume when the boat is headed into a five m.p.h. wind. Net volume is volume remaining after the volume of fuel lines, etc., is subtracted from compartment volume.

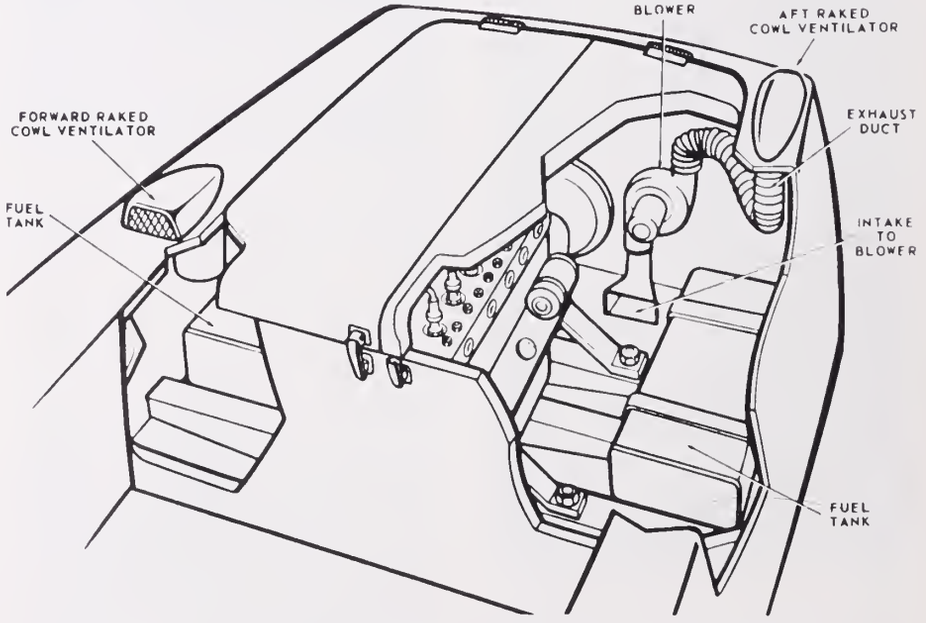
Allowing for 80 per cent efficiency, both intake and exhaust ducts should have minimum cross sectional areas of .41 square inches per cubic foot of compartment volume. Two inch diameter vents and ducts will handle a compartment volume of 7.7 cubic feet.

OBC recommends that blowers be installed to supplement the ventilating system in closed compartments. Blowers should be capable of completely removing a volume of air from the engine compartment equal to the net compartment volume in less than one minute. There should be a sign near the ignition switch that contains information on the length of blower operating time required to clear the engine compartment before starting the engine.

Motors for electric blowers, when installed within the engine compartments, should be the sealed or arcless type. When blowers are not provided for closed compartments, the operator's position should have a sign near the ignition switch with instructions for opening the engine compartment hatches before starting the engine.

When blowers are installed, they should be placed in the exhaust duct so that they will draw out fumes that have settled to the compartment bilge.

Although the number of fires and explosions on all types of motorboats is low compared to other types of accidents, the results often are extremely serious. With the advent of the high horsepower outboard motor, fuel tanks on the tops of motors have been replaced by systems with larger tanks stowed within the hulls. Add a spare can or two of gasoline, and a battery or other source of spark, and the stage is set for more and bigger fires and explosions. A ready fire extinguisher, and ventilation of all compartments that house fuel containers and are capable of pocketing vapors, are musts for safe boating.



In the installation shown here, two inch diameter vents and ducts will handle a net compartment volume of 7.7 cubic feet. Cowl ventilators or fittings should not restrict the minimum size vent opening at any point.

'62-'63 BIG GAME

TROPHY CONTEST

REGIONAL AND STATEWIDE COMPETITION IN THE FOLLOWING CLASSES:

I Nine points or more	**II** Seven to eight points
III Six points or less	**IV** Bow and Arrow
	V Open Bear Division (Statewide only)

- *Prizes* for regional winners
- *Trophies* for first place State winners in each Division
- plus *Honorable Mention Certificates*

RULES

1. Entries to be judged by a modified version of the Boone & Crockett System
2. Hunters to be able to furnish proof of legal kill upon request
3. Regional competition limited to animals killed in that region
4. All entries in state competition to be first entered in regional competition

WESTERN REGIONAL CONTEST

October 17, 18, 19
National Guard Armory
Harrisonburg, Virginia

For entry details contact
Kermit Dovell
955 South High Street
Harrisonburg, Virginia

Sponsored by the
Harrisonburg-Rockingham
County Izaak Walton League

STATE CONTEST

November 2
Municipal Armory
2900 Warwick Blvd.
Newport News, Virginia

Sponsored by the
Virginia
Commission of Game and
Inland Fisheries

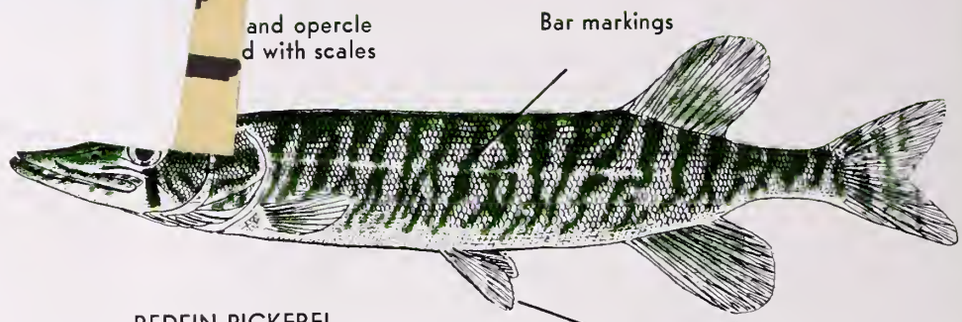
EASTERN REGIONAL CONTEST

November 2
Municipal Armory
2900 Warwick Blvd.
Newport News, Virginia

For entry details contact
E. N. Vandenbree
41 Sinton Road
Newport News, Virginia
or
W. R. Harris
4 Greenland Drive
Tabb, Virginia

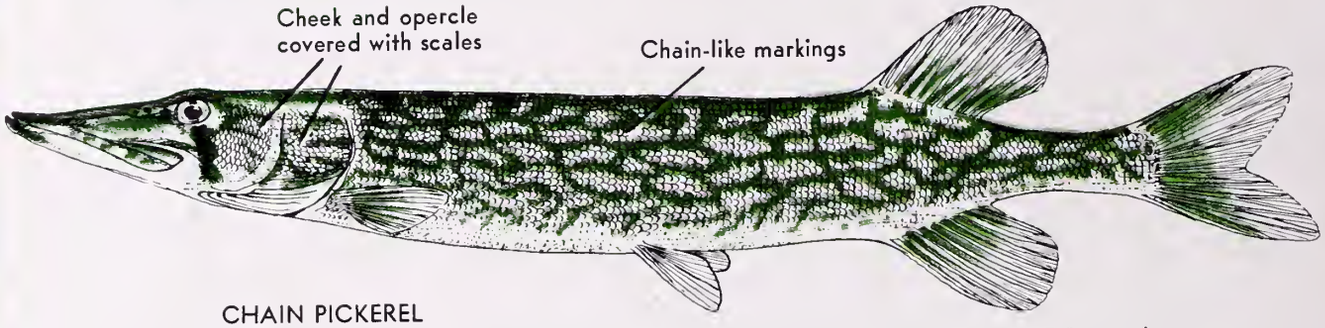
Sponsored by the
Peninsula Sportsmen's Assn.

t... PIKE family



REDFIN PICKEREL

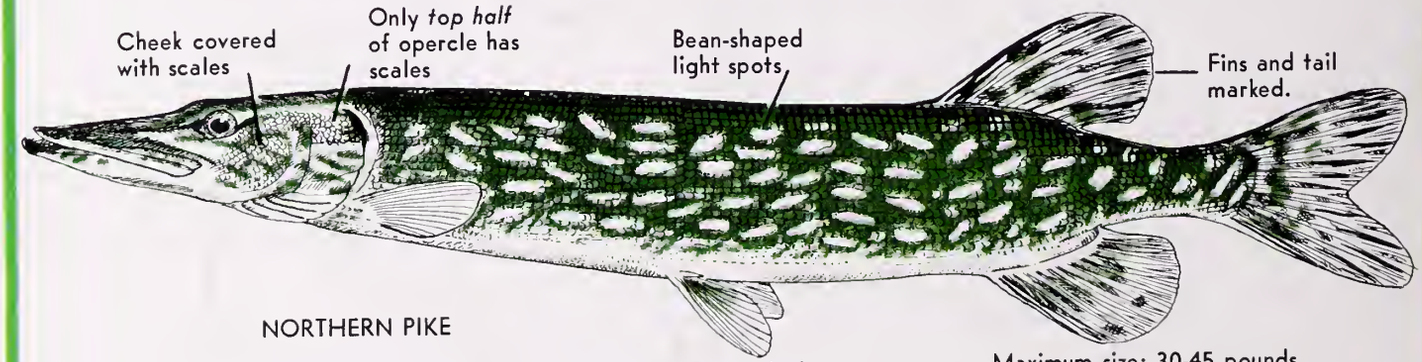
Maximum size: 15 inches
Average size: 7-10 inches



CHAIN PICKEREL

Young may be marked very much like adult redfin.

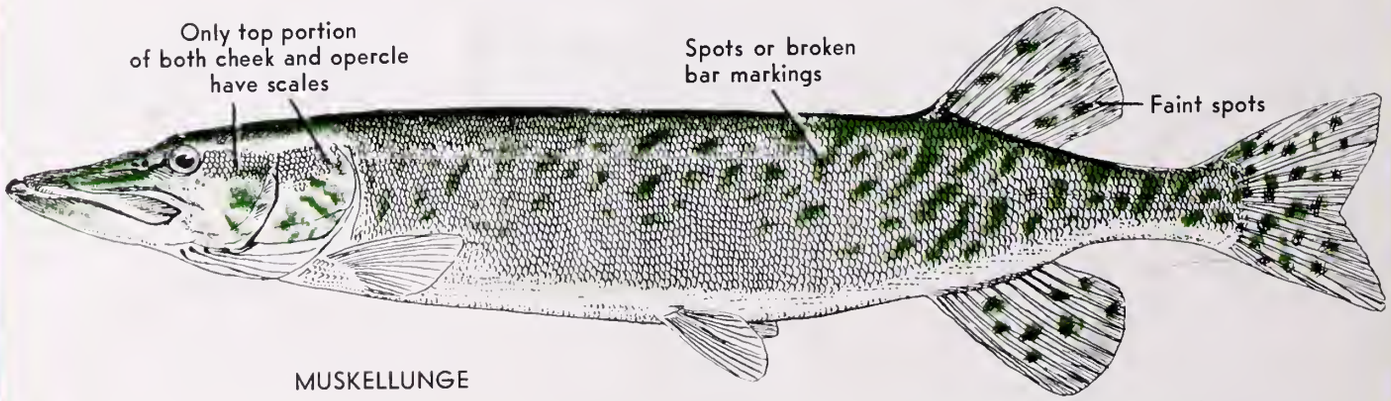
Maximum size: 7-9 pounds
Average size: 1½-3½ pounds



NORTHERN PIKE

Young may be marked much like young pickerel.

Maximum size: 30-45 pounds
Average size: 5-10 pounds



MUSKELLUNGE

Young have more bar markings

Maximum size: 50-65 pounds
Average size: 8-15 pounds